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BY WILLIAM ALDREN TURNER, C.B., M.D.,
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MR. PRESIDENT AND FELLOWS OF THE COLLEGE,—Under the terms of the lectureship, the Bradshaw lecturer is free to promote the interests of medicine by a discussion of any relevant subject. I have undertaken, therefore, to bring to your notice a short account of the neuroses and psychoses of war, confining my remarks especially to the neuroses more directly attributable to the stress of active warfare and what has been popularly called "shell shock." Without this limitation it would have been necessary to have begun with a description of the neuroses and psychoses which occur during the training of the recruit. This, indeed, might be a fruitful introduction to the subject, as the nervous and mental disabilities of this period are instructive in relation to those of active warfare. During the early months of the war, under the voluntary system of recruitment, neurasthenic symptoms were not uncommon in association with conflicts in the minds of conscientious men, who were torn between duty to their country and their personal feelings, opinions, and habits.

NEUROSES AND PSYCHOSES OF TRAINING.

In more recent times, under compulsory service, many men have entered the army who are constitutionally and by upbringing and education unable to adjust their outlook to service conditions. In other words, the young soldier becomes neurasthenic owing to a failure of adaptation to a continued emotional cause and the struggle to bring about such adaptation (Dejerine). This failure may take the form of either a nervous or a mental disability.

In the neurasthenic type the symptoms are those well known in the neurasthenia of civil life—fatiguability, digestive disturbances, vague myalgic pains, and hypochondriacal feelings. This is a nervous reaction to camp life, and is frequently accompanied by fears and dreads in anticipation of what may happen when the soldier proceeds on active service, such as death or serious incapacitating wounds. A large number of these men are constitutional neurasthenics, and have suffered from a nervous condition previous to joining the army.[1]

Those who have had opportunities of working in the mental war hospitals know how frequently young soldiers, especially when below the normal standard of mental development, are prone to mental breakdown during the early months of training, and how readily any latent morbid or abnormal trend may be brought quickly to the surface under the stress of camp life and military discipline. (Henderson.[2])

PSYCHOSES OF WAR.

Although a large number of recruits with definitely neuropathic or psychopathic tendencies may pass through the period of training successfully, there remains a liability to breakdown when the soldier finds himself under the stress and strain of active service. Here the emotional causes are obviously more potent and more continuous, and the psychoses are the reactions to a situation which cannot be adequately met. Although the statistics from the mental war hospitals differ to some extent, one is struck by the numbers of mental defectives and of those with known psychopathic heredity or disposition admitted as patients. Approximately 10 per cent. of the patients coming into the mental war hospitals from overseas have had a previous attack of certified insanity.

A confusional psychosis is probably the most common type of mental reaction observed in soldiers coming from overseas. In many cases it is superimposed upon a foundation of feeble-mindedness. In others it forms the basic reaction and is attributable to a cerebral commotion, shell shock, or psychical trauma occurring in soldiers with a psychopathic inheritance. In both these types the prognosis is good, the duration of the confused state being relatively short and lasting from a few days to several weeks.

There is another variety in which a confusional psychosis is the early phase or the onset of an underlying and more deeply rooted disorder, such as dementia præcox. Eager[3] has recorded that amongst the large number of cases admitted to the Lord Derby War Hospital 28 per cent. belonged to the manic-depressive group, 19 per cent. were classified as mental deficiency and delusional insanity respectively, and 8 per cent. as dementia præcox.

Although the study of mental reactions attributable to stress of campaign is of great psychiatric interest,[4] I do not propose to continue the subject further, but ask you to accompany me to a neurological centre in France, where we shall have an opportunity of observing some types of cases illustrative of the neuroses of war.

CLINICAL TYPES OF WAR NEUROSES.

We would see amongst the patients men who had been sufferers from a war neurosis on previous occasions, and who had been returned to duty.

We would see also young and inexperienced soldiers who had given way to fear or alarm at their first experience of bombardment. Some of them would show the acute symptoms of fear in dilatation of the pupils, staring eyes, rapid action of heart, and sweating. Others would give the impression of having lost, at all events for the time, their self-respect and self-confidence. A few of them exhibit rhythmical tremors, which had, no doubt, been involuntary and irrepressible at first, but which were now within the range of voluntary control and susceptible of relief by distraction, persuasion, and encouragement.

There would also be patients suffering from fatigue and nervous exhaustion, requiring rest in order to restore them to duty. The symptoms complained of by these patients, in addition to a sense of weariness, consist of irritability and jumpiness, with difficulty in concentrating attention. Some would probably say that their sleep was disturbed by unpleasant dreams connected with their duties, and that they had difficulty in falling off to sleep and might waken with a start. Others might complain of palpitation, giddiness, breathlessness, and a feeling of oppression or anxiety in the region of the heart.

Our attention would be called to another class of case in which the symptoms are those of an anxiety neurosis. The patients are commonly young officers. A frequent history is that after he has been abroad for several weeks or months the officer begins to sleep badly and loses appetite. Worry and anxiety follow on this; he loses confidence in himself and thinks that he is incapable of doing his duty adequately. He becomes shaky, unduly emotional, and finds that his sleep is disturbed by nightmares referring to his experience of trench warfare. Even the waking hours may be distressful from the acute recollection of these experiences intruding into his memory. Headache, mental depression, and a fine tremor may accompany these symptoms, but the reflexes are normal, the tongue is clean, and the pulse of normal frequency. In the more exaggerated types fears as to his sanity, as to his ability to "carry on," as to whether his comrades may think he is a coward, begin to obsess him. This condition may continue, and the soldier perseveres with his work until a commotional shock, an upsetting experience, or bad news from home precipitates an incapacitating disability and he is sent to hospital.

On our progress through the wards our attention would be called to a class of case presenting very definite objective signs, such as we are accustomed to see more commonly in the neurological hospitals at home. Probably the largest class would show speech defects, such as mutism, deaf-mutism, aphonia, and stuttering. Others would present diverse types of tremor and tic-like movements. We would see various forms of paralysis, especially of the lower limbs, with disturbances of gait of the astasic-abasic type. We might see one or more cases of "bent back."

Examination would reveal the fact that these symptoms were of a functional or hysterical character, and that many of the patients had been admitted to hospital in a state of stupor following a shell explosion or burial.

STUPOR, DELIRIUM, AND AMNESIA.

The cases forming the next group are especially interesting, as they demonstrate what may be regarded as the most acute expression of psychoneurotic symptoms, due to fear, horror, and profound emotional or commotional causes. Stupor and delirium are the outstanding features, and of the two types one is distinguished by torpor or cerebral inactivity, the other by what has been called "visionary" or "oneiric" delirium. The symptoms of the stupor type are quite distinctive. In

the more severe class of case the patient is entirely unconscious of his surroundings; he lies motionless in bed and makes no reply to questions; his eyes show no recognition of what is before them; all the usual tests applied with the object of arresting his attention fail to provoke a response. A close examination reveals in many cases some rigidity of the limbs of the catatonic type. The deep reflexes may be normal or exaggerated; the pupil light reflex may be impaired or lost; the plantar response may be flexor or abolished. Urine may be passed normally, or catherisation may be necessary for a day or two. Swallowing is effected usually without difficulty.

In milder cases stupor is less profound. The patients may carry out simple actions, but in a slow and hesitating way. They present a dazed or confused appearance, are startled easily, and take little or no notice of what is going on around them. In the other type the delirium is accompanied by gestures. These patients would appear to be living as in a dream through a recent terrifying experience. When information has been obtained as to the onset of the symptoms it has been found to be connected with a psychical shock, such as the mutilation or burial of a comrade or friend from shell explosion.

The duration of the stupor varies. In some instances the intensity of the stupor may have passed away before admission to hospital. It lasts usually from a few hours to several days and may pass off suddenly or gradually. This symptom is found mainly in young soldiers.

With the disappearance of the stupor the soldier may find that he is mute, deaf, paralysed, or unable to walk without assistance, the subject of a tremor, or, very commonly, the victim of an anxiety condition in which intense headache, battle dreams, insomnia, vertigo, lack of mental concentration, and fatigue are prominent symptoms. The memory for the stupor period and probably also for some days antecedent to it is obliterated. In the milder cases it is merely confused and uncertain. Cases may be found in which the memory of the whole life antecedent to the shock has been wiped out; and there are other cases in which the memory of the specific emotional episode which precipitated the stupor may be retained, though that of the subsequent days is abolished. The amnesia of cerebral concussion is probably more profound than in the emotional cases and is of both retrograde and anterograde type. It is to this period of stupor and amnesia that the soldier applies the term "loss of consciousness" or "loss of memory."

The majority of the cases of stupor and delirium are examples of psychoneurotic mental states, attributable to fear and horror, but phenomena essentially identical to them may be found in men who have been exposed to a cerebral concussion or commotion.

ORGANIC AND FUNCTIONAL CONDITIONS.

At all times there may be a difficulty in the differential diagnosis of the concussion from the so-called emotional cases, but such diagnosis is more easily effected the earlier the patient is brought under observation. A careful neurological examination of men who have been exposed to the effects of shell or mine explosion or who have been buried and are suffering from loss of consciousness, stupor, mental confusion, delirium, or paralysis would in some instances reveal the physical signs of minor structural lesions of the brain or spinal cord.

In the writings of the earlier observers on this subject, and in some at the present time, there is a tendency to attribute many of the phenomena of shell shock and the war neuroses to physical causes, such as concussion, fatigue, or gas-poisoning, and perhaps to ignore, or at all events underestimate, the influence of the psychical factor. A school of the French neurologists in particular has laid stress upon the importance of "cerebral commotion" in the causation of the psychoneuroses of war.

The modern school of psycho-pathologists, on the other hand, may incline too much in the contrary direction, and claim all the symptoms of the war neuroses to be of psychogenetic origin. This school maintains that the neuroses of war arise from an inability on the part of the soldier to react to his environment; in other words, they are brought about by a failure of psychological adaptation and to the repression of one of the conflicting emotions which arise therefrom.

In many of the published records of cases of war neuroses and shell shock the distinction has not been drawn with sufficient clearness between those symptoms which arise in consequence of physical and psychical causes respectively; nor is this altogether an easy matter, even when each case has been examined neurologically in the earliest stages after the shell explosion.

We may now proceed to examine in fuller detail the origin of the neuroses of war, and in particular their relation to the sudden incapacitating agency of "shell shock."

CONCUSSION SHOCK.

Some of the French neurologists draw a distinction between direct and indirect concussion.[5] In the former the symptoms are those of structural lesions of the central nervous system. In the latter there is no visible external injury, but a "cerebral commotion" is produced indirectly by exposure to the forces generated by the explosion of powerful shells through atmospheric vibrations transmitted to the nervous tissues by the cerebro-spinal fluid.

The immediate clinical effect upon the soldier of cerebral commotion due to the forces generated by the explosion of shell or mine is a loss of consciousness which may last from a few minutes to several days. This may give place to a partial loss or "twilight state" of consciousness, with which may be associated mental confusion or a "visionary" delirium resembling that which has been described.

A detailed neurological examination, therefore, is necessary in quite the earliest stages of all cases in order to determine the existence or otherwise of structural changes in the central nervous system.

We are indebted more especially to the French neurologists,[7] working in the neurological centres of the French Armies, for observations on this point. The following have been observed in the earliest stages of shock: muscular relaxation and hypotonia, impairment or abolition of the deep reflexes, the presence of an extensor plantar response, retention of urine, inequality of the pupils, and impairment of the light reflex, hæmorrhages into or rupture of the retina, and voltaic vertigo. The examination of the cerebro-spinal fluid during the first two or three days following the shock may exhibit blood staining, raised pressure, increase of the albumin content, and sometimes a lymphocytosis.

These objective signs may be quite transitory, and disappear rapidly within a few days, so that when the patient is re-examined after a short interval, no evidence of their existence is detected; but the presence of other symptoms may be observed. It is most unlikely that concussion, pure and simple, unaccompanied by any emotional element, gives rise to psychoneurotic symptoms. There is, however, a class of case probably belonging to the suggestion hysterias in which early organic symptoms may be succeeded by those of a hysterical character.

"TRAUMATIC NEUROSIS."

It would appear, therefore, as if minor recoverable changes of a structural character due to "commotion" may play an indirect part through suggestion and association in the pathogenesis of those symptoms, which disappear under persuasion. This leads to the subject of "traumatic neurosis," the original idea of which was that the nervous and psychical symptoms were dependent upon organic lesions of the brain arising in consequence of the trauma. A conception more in harmony with current psychological doctrine attributes the symptoms of the neurosis to psychical causes. Farrar[8] has thus expressed it:—

> "The injury of nervous tissue is not necessarily the cause of any possible manifestations which may follow, but it may serve as the starting point of certain trains of association which need never be fully in the consciousness of the patient, but which nevertheless eventuate in the developed fixed neurosis, with all its psychical, neurological, and somatic phenomena."

The chronic symptoms of the fixed neurosis or sequelæ of concussion are, on the neurological side, persistent and often severe headache, photophobia, hyperæsthesia to sounds, vertigo associated with labyrinthine hyperæsthesia, insomnia, and battle dreams. On the psychological side, loss or perversion of memory, irritability, loss of self-confidence, defective concentration and slowness of thought, over-emotivity, depression, anxiety, and even melancholia. Amongst these symptoms are several which are more characteristic of the anxiety neurosis, such as over-emotivity, "terror dreams," anxiety and depression. It is unlikely that concussion gives rise to anxiety unless this neurosis was in process of development at the time of the shock. Concussion, therefore, happening to soldiers in whom neurotic symptoms are already present, may cause a sudden accentuation of the anxiety picture.

Although the symptoms mentioned may scarcely be regarded as peculiar to cerebral commotion in the orthodox sense, they are characteristic of quite a numerous class of patients in the war hospitals at home. The course of this disability is always protracted and improvement may not take place until after many months. From the purely military standpoint the class is important, as a relapse almost invariably follows a return to active service. Moreover, it is always a difficult matter to determine just the point where the neurosis merges into a subconscious or partially conscious exaggeration of symptoms. So many influences combine to favour exaggeration or prolongation of symptoms in soldiers, such as return to further service, permanent incapacity, and considerations over pensions, that there is no question in the whole range of psycho-neurotic disorders upon which medical officers have greater difficulty in giving a decision. But malingering in the sense of being a conscious and reasoned simulation or creation of a pathological picture for the purpose of deceit is rare in our military neurological hospitals.

FAILURE OF PSYCHOLOGICAL ADAPTATION.

Contemporary psycho-pathologists maintain that all neuroses are "reactive" disorders—that is to say, they are the consequences of a failure of psychological adaptation or readjustment to environment. Associated with the process of readjustment is repression, which, as Rivers[11] says, is not in itself harmful, but only under conditions in which it fails to adapt the individual to his surroundings.

The psychological history of every individual will reveal how far he has been able to adapt his mental outlook to the ordinary and accidental circumstances of his life.

On entering the Army, as we have seen, men may break down owing to a failure to react normally and to readjust themselves to the conditions of military service, discipline, and training.

On entering the zone of the active operations of war circumstances calling for adaptation and readjustment at once present themselves, and it is remarkable how large is the number of men who are able within a very short time to react physiologically and maintain their nervous health for long periods under the exacting conditions which characterise modern warfare. It is not easy, for various reasons, to estimate the number of men admitted to hospital on account of war neuroses and the effects of shell shock, but an approximate estimate puts the number at from 5 to 6 per cent. of the total sick transferred to the hospitals at home.

It is well known that soldiers wounded physically do not as a rule suffer from shell shock, although no doubt they have been exposed to the effects of shell or mine explosion just as have the unwounded. Wiltshire[12] explains the immunity of the wounded on the ground that a physical wound neutralises the action of the psychical causes of shell shock, but it is more likely that the somatic wound, being the ideal form of relief, is to the soldier the fulfilment of his wish to get away from an intolerable situation. Both anxiety and hysterical symptoms may appear later on, when the wound is healed. In all warfare, but especially in the trench form, which has been a special feature in the present war, numerous factors are at work to impair the soldier's resistance.

PRODROMATA OF "SHELL SHOCK."

It has been stated by one writer on the subject (Forsyth[13]) that the situation derives its psychical importance from the fact that it involves the risk of death.

Core,[14] in a suggestive paper on "Instinct Distortion or War Neurosis," points out that in modern warfare men are daily put into positions of imminent danger; the danger to life under certain conditions of military duty may be so great as to render death a practical certainty.

MacCurdy,[10] who has written an instructive paper on the war neuroses, gives a graphic account of the development of the anxiety states, which are amongst the commonest of the war neuroses. This writer has referred in detail to the mental conflict in soldiers on active service, and officers in particular, between desire to continue on duty and the repression of an increasing feeling of incapacity and apprehension. The soldier becomes fatigued and his adaptation becomes weakened and finally lost. He feels every day more acutely sensitive of the horrors around him. He becomes apprehensive and his courage is forced. He begins to feel ashamed that he may be regarded as a coward by his comrades. He grows mentally and nervously more unstable. He regards as a weakness the thought of going sick. He fears that he may not be able to hide his fear.

Under the influence of mental conflicts such as these the soldier may resort to reckless and daring deeds. He becomes hypersensitive, irritable and jumpy, and his sleep may be disturbed by dreams connected with his duties. Eventually the idea develops of how he can escape from an unbearable situation, and sometimes with this the desire for death and thoughts of suicide.

When this degree of mental anxiety and depression has been reached, and in many cases long before, any shock may precipitate a breakdown. Amongst such shocks may be horrible sights, partial burial in consequence of shell or mine explosion, an unusually dangerous situation, a serious disappointment or bad news from home, but most common of all a cerebral concussion or commotion from shell explosion. The effect of one or other of these traumata, but especially the last, is the onset of a stupor, a delirium, or an amnesic "fugue."

PSYCHOLOGICAL CONTENT OF STUPOR.

The acute or major symptoms of the war neuroses follow upon the shell explosion or other precipitating cause.

The onset of these symptoms occurs usually under two conditions. First, they are observed as the soldier recovers from a stupor or amnesia of the onset and duration of which he has no recollection. In some cases, however, a brief interval may elapse between the shell explosion and the loss of consciousness, in which an emotion of intense fear or horror may be active.

Secondly, the symptoms may develop after an interval of variable duration from the shock, during which the soldier may have attempted to "carry on," may have been found wandering behind the lines in a somnambulistic "fugue," or may have been able to find his way back, alone or assisted, to a regimental dressing-station or ambulance. In this last event the memory of what has occurred is retained, although the mental perspective may be blurred, and the man may state that he "fainted" or was momentarily stunned at the time of the shock. These patients may be able to describe the circumstances of the shell explosion or give a vivid account of the horrible sights which they had seen.

As already described, the shell shock is the coping-stone or precipitating agent in a series of mental pre-occupations which may have troubled the soldier for weeks or months. It will be of interest, therefore, to analyse, so far as this is possible, just what is the psychological content of the stupor, as the effect of it upon the soldier's mind is such that he traces the development of his subsequent symptoms mainly to the "loss of consciousness" or "loss of memory" which he associates with the shock. In some cases stupor-amnesia is of "dynamic" nature, arising from a cerebral concussion or commotion. In other cases it is "functional" and of a psychical character, but it is not unlikely that the latter may emerge from an original transient commotional loss of consciousness.

W. Brown,[15] who was for some months in medical charge of a neurological centre in France, says that an examination of many of these cases under hypnosis shows that there is a dissociation or splitting of the personality rather than a true loss of consciousness. He is of opinion that the stupor-amnesic phase corresponds to a period of subconscious emotional development dominated by fear and not to the working merely of suggestion. Acting on this hypothesis, he has treated his patients by means of light hypnosis, during which they go through their trench experiences, and in this way "work off" the suppressed emotion. It is this which, in his opinion, brings about the return of the power of speech, and not direct suggestion.

Myers,[16] who also has had favourable opportunities of studying cases of shell shock in the stupor phase, states that under hypnosis these men often become excited, and not infrequently show clear evidence of living again through scenes which come vividly to their minds. In his view, dissociation arising from inhibition is the fundamental cause of the effects of shell shock.

MUTISM AND ASTASIA-ABASIA.

It has been mentioned already that certain objective functional symptoms may be observed as the soldier emerges from the stupor which follows a shell concussion or psychical shock. Of these the most important are mutism, deaf-mutism, and the minor speech defects—aphonia and stuttering. Indeed, mutism and deaf-mutism are prominent symptoms during the period of stupor, and are attributable

to the inhibiting influence of the fear or horror which underlies the stupor.

Mutism is accompanied frequently in the earlier stages by other symptoms of the neurosis, such as headache, tremors, twitchings of the limbs, and insomnia; and, apparently as a kind of counterpoise to the dumbness, a certain fluency of expression in writing is not uncommon.

Myers, who has made a special study of mutism in relation to shell shock, states that in nearly every instance mutism is closely dependent on some form of stupor and is a relic of that condition after it has passed off. As he regards stupor as a state of functional inhibition, it is not difficult to understand that inhibition should disappear last in the case of hearing and speech, which are the two main channels of intercourse with others.

Another and less common motor disability resulting directly or indirectly from the effects of shell shock is astasia-abasia, in which on attempts at walking the limbs are incapable of action, in spite of obvious effort to move them. This paraplegic disorder may be accompanied by clonic tremor. It is observed in many atypical forms, some of which resemble the disordered gait accompanying organic disorders of the nervous system.

A variety of this disability is accompanied by anxiety, in which the patient is obsessed by a fear that he is unable to walk; he clutches at any support; he can only be made to take a single step forward, and if he puts one leg forward he quickly draws it back, certain that he is about to fall.

These disabilities of speech and gait, if left untreated in the early stages, may become "habits" and join the other functional disorders described under hysteria as unconsciously developed "defence mechanisms."

ANXIETY AND DEPRESSION SYMPTOMS.

The anxiety neurosis and anxiety depression are amongst the most common symptoms of the war neuroses. They may occur alone or in association with mutism and paralytic symptoms. We have already seen the development of an anxiety neurosis prior to the receipt of the psychical shock or cerebral commotion. The effect of these agents is to determine a more acute development of symptoms, which incapacitate the soldier and render him temporarily unfit for duty. The outstanding symptom of the anxiety neurosis is the recurrence of terrifying nightmares or "terror dreams" which torture the patient during sleep, and in consequence add to his troubles a fear of going to sleep.

Mott,[17] who has made a study of them, says that although the soldier sometimes may have no conscious recollection of the dream he may wake up suddenly in terror, bathed in perspiration, or he may have been heard to shout in his sleep and seem to go through a pantomime of fighting with bombs, rifle, and bayonet.

The patient's progress towards recovery may be estimated largely by the degree and frequency of his dreams. The first sign of recovery from the neurosis is when the dreams no longer wake the patient, although he may remember that he has had them. As the patient continues to improve the element of fear disappears from his waking life and in the course of time from the dreams. (Core.)

The prominent mental symptom of the anxiety neurosis is depression, coloured by underlying fears and dreads. This depression is not continuous, nor is it of the negative type characteristic of the melancholic. It may be revealed outwardly by a drawn and anxious facial expression, and a lack of interest or of desire for companionship. There are periods when the patient is relatively free from anxiety, but such spells of intermission may be broken by apparently causeless waves of depression, accompanied by anxiety and apprehension, and often associated with the intrusion into consciousness of the memory of a particular and unpleasant incident of war experience.

Rivers has pointed out that many of the most trying and distressing symptoms of war neuroses are not the direct result of the strain and shock of warfare, but are due to the attempts to banish from the mind distressing memories or painful affective states which have come into being as the result of war experience.

Rows [18] has shown that of equal and perhaps greater importance in the maintenance of the anxiety symptoms in soldiers, after the more acute or immediate symptoms of the war shock have passed away, are the memories of experiences in earlier life, with which a strong emotional tone is connected. These memories may be revived in dreams, which are often added to the war dreams; or they may be associated with delusions and hallucinations of hearing, often of a persecutory type.

Cases such as those last mentioned, and they are not so uncommon as might be supposed, require prolonged mental analysis and much patience for their elucidation. If the patient can be brought to understand the nature of his trouble, to face it, and to recognise in it simply a memory of the past, the anxiety will lessen and eventually disappear.

An objective sign of the anxiety neurosis observed at the outset and subsequently is profound loss of body weight. This may occur to a remarkable extent, up to as much as one or two stones. The recovery of the weight is coincident with the disappearance of anxiety and general improvement in the patient's health. Lowered blood pressure and an unusual degree of fatigue on physical effort are associated phenomena.

A number of those who suffer from the milder forms of the anxiety neurosis, coming home from overseas, recover in a relatively short time, varying from a few weeks to three or four months, under conditions entailing rest, quiet, and attention to sleep. About an equal number require special psycho-therapeutic attention before they find relief from their more persistent symptoms. But if the mental disorder has become fixed and systematised the difficulties may be great, and recovery will not always take place.

SYMPTOMS IN OFFICERS AND MEN.

It is a common observation that symptoms of anxiety and so-called neurasthenia are more common in officers, and that the more objective symptoms of hysteria—mutism, contractures, paralysis, astasia-abasia—are more frequently observed in men. In a general way this is true, but a combination of anxiety-depression and gross hysterical symptoms is by no means uncommon amongst men in the ranks.

Several explanations of this difference have been offered, but the most likely reason is found in the position of greater responsibility in which the officer is placed, and to the mental struggle which he undergoes in order to banish from his mind doubtings as to his adequacy or competency. The statement has been made that the mental background of hysteria in the men is an attitude of antagonism to the fighting, accompanied by an idea of release from an unbearable situation (McCurdy). This release may be obtained through several agencies, but a slight concussion, a psychical shock, partial burial, a minor and not necessarily incapacitating wound, an accident or an illness, may be sufficient.

HYSTERIA IN SOLDIERS.

The functional disorders of speech have been given separate mention, as mutism is due to dissociation arising from inhibition or subconscious emotional development during stupor. Interference with consciousness, indeed, appears to be the crucial test of so-called "shell shock."

In Dejerine's[19] view emotion alone is much more powerful than suggestion in creating symptoms by dissociation, although he admits the secondary rôle of suggestion in the persistence of hysterical symptoms.

Babinski,[20] on the other hand, holds that suggestion plays the essential part in the production of hysterical phenomena, and that the neurology of the war has strengthened in his mind the idea of the indispensable rôle of suggestion in their production.

It has been observed by all workers in the neurology of the war that hysterical manifestations are less frequent and less striking in the front lines. It is when the soldier is removed to calmer surroundings away from danger, such as a casualty clearing station, that the psycho-neurotic condition comes to light. If the patient is not treated suitably at this period the emotion which causes the symptoms becomes fixed and more deeply rooted the older its inception. Hence hysterical paralyses, contractures, disorders of speech, of hearing, of gait, and of vision are more numerous in the base hospitals, and especially in those at home.

Local trauma, such as a minor gunshot wound when applied to any part of the body, may produce a psycho-neurotic disturbance in a predisposed person. It acts through auto-suggestion, as well as through emotion, in that it creates the idea of an organic disorder and constitutes the agent which fixes the neuropathic condition.

The onset of local pain also, with or without bruising of the part, may act as a determinant of a functional disorder. Following upon a fall or being thrown against some object in consequence of shell explosion or burial, but without any

loss of consciousness, the soldier may complain of a severe pain in the back, which may be followed by loss of power in the legs of a functional character. In other cases the pain may interfere with extension of the spine. In order to relieve the pain an attitude of flexion of the body is assumed, and the condition known as "bent back" or camptocormia is evolved. This is primarily an antalgic posture, which may eventually lead to a contracture of the muscles of the trunk of hysterical character.

Hysterical contractures of the hand or foot are frequently the outcome of a wound of the arm or leg, with or without implication of the peripheral nerves of the limb. The exciting cause may be anything from a slight and superficial abrasion to a penetrating gunshot or shrapnel wound. Sometimes the contracture instantaneously follows the receipt of the wound, but in the majority of cases it would appear to be the outcome of suggestion following immobilisation of the limb in a sling, splint, or other mechanical apparatus.

It is not exceptional to find paralyses and contractures preceded by more or less vague pains in the joints of limbs which have been bruised. These pains may be the origin of hysterical paralyses or contractures, apparently of spontaneous origin, and which persist long after the pain has disappeared. Hysterical disorders, moreover, may develop while the soldier is in hospital suffering from a medical or surgical disability, connected or not with war experience, such as trench feet or appendicitis.

Most of the war hysterias, if allowed to become habitual, are eventually "defence mechanisms," developed unconsciously, but persisting as reactions against various contingencies, of which the chief is a desire not to return to the firing-line or, indeed, to any form of active warfare.

Any suggestion of organic disease on the part of the medical officer, on whose opinion the soldier rightly lays great stress, should be carefully avoided, as the latter is always ready to accept and retain in his mind any suggestion that he is not likely to recover.

TREATMENT OF WAR NEUROSES.

It is a matter of practical experience that the hysterical symptoms of the soldier can be cured rapidly and effectively by a well-directed and convincing psychotherapy, consisting of suggestion, persuasion, and re-education. On the contrary, their duration and persistence may be prolonged indefinitely by repeated changes from one hospital to another and by unsuitable and misguided methods, by which is meant a therapy promoted to suggest to the patient that he is suffering from a serious disability of organic nature, especially when this treatment is carried out in an atmosphere of sympathy and hero-worship. Treatment given at spas, where great attention is paid to electrotherapy, balneotherapy, and massage, undoubtedly tends to fix the neurosis in the patient's consciousness.

It is universally admitted that the sooner soldier patients suffering from any form of functional nervous disorder are submitted to a therapy in accordance with the psychogenetic origin of their symptoms the more rapid and satisfactory is the cure.

PROVISION FOR TREATMENT OF THE NEUROSES IN THE ARMY.

Early in 1915, in consequence of the large number of cases of this character requiring expert diagnosis and treatment, the Director-General of the Army Medical Service established neurological sections in all the general Territorial hospitals in the United Kingdom, under the care and direction of physicians who had special knowledge of, and experience in, diseases of the nervous system. A limited number of special hospitals were also set up for patients suffering from the more obviously psychical effects of shell shock and the war neuroses, and who were not suitable for treatment in general hospitals.[22]

As time went on fuller knowledge and larger experience of these cases were acquired from a study of them in the special hospitals. It became evident that the multiform symptoms of the war neuroses and minor psychical disturbances following stress and strain of the campaign were of psychogenetic origin, and that a knowledge of normal and abnormal psychology and of mental disorders was essential in order to obtain correct insight into diagnosis and skill in treatment.

In consequence a larger measure of success attended the treatment of those patients in special than in general hospitals, where the essential conditions of treatment were not available. Numbers of soldiers, therefore, were being discharged from the service on account of functional nervous disorders of a kind curable under proper conditions of treatment. In order to remedy this state of affairs it was necessary largely to increase the number of special hospitals, to divert as far as this could be done the admission of functional cases from the general to the special hospitals, and to make provision for the training of special medical officers. Recommendations based on these principles were laid before the Director-General at a conference of neurologists and psychologists at the War Office in the autumn of 1917, and have now largely been carried into effect.

Training of Special Medical Officers.

In order to meet the needs of the special hospitals a training centre for medical officers was established in connexion with the Maghull Military Hospital, under the direction of Lieutenant-Colonel R. G. Rows, who has done so much towards developing the psychological treatment of the war neuroses. In addition to acquiring a sound clinical knowledge of these disorders medical officers are grounded in the principles of psychology and psycho-pathology. I mention this especially, as it is the first and at present the only school of clinical psycho-pathology in this country, although other training centres are now being established. It is the hope of those who are interested in this branch of medicine that so favourable an opportunity of continuing a school of this character should not be allowed to lapse, and that something should be done during the period of reconstruction after the war to establish on a permanent basis and for the benefit of the civilian patients one or more institutions similar to that which has been founded to meet the urgent claims of the soldier.

Principles of Treatment of the War Neuroses.

There would appear to be general agreement upon the value of the segregation of soldiers suffering from the neuroses of war and three to four years' experience has justified the principle. It is essential that these patients, when segregated, should be under specially trained medical officers and that "an atmosphere of cure" should pervade the special hospital. The great value of segregation is that all patients may be studied individually and all agents determining causation, exaggeration or prolongation of symptoms may be sought out and eliminated. There is no evidence that in properly conducted hospitals these patients imitate each others' tremors or abnormal gaits, while it is well known that in general hospitals the eccentricities of conduct and behaviour of the hysterical patients make them objects of curiosity and often of humour to the other patients.

It has long been recognised that the sooner the patients are brought under skilled treatment the more rapid and satrsfactory is the cure. By these means the symptoms which in the early stages are removable and "fluid" are prevented from becoming fixed and a "habit" established. The French Military Medical Service recognised this early in the war and established neurological centres in the zones of their armies. In consequence of the success attending the treatment of the war neuroses in these centres similar centres were established in the areas of the British armies in the winter of 1916–17.

A large number of cases of war neuroses in the early stages of their disability derive great benefit from a modified rest cure. In the later or "habit" stages a judicious combination of suitably directed psychotherapy and selected occupation, according to the mental and physical fitness of the soldier, gives the most satisfactory results. Occupation further supplies the best means of grading the soldier when the time arrives for his discharge from hospital to duty.

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FACTORY AND WORKSHOP CONDITIONS AND THE PREVALENCE OF PULMONARY PHTHISIS:

THE NEED FOR AN INDUSTRIAL HEALTH SERVICE.

BY BENJAMIN MOORE, D.Sc., F.R.S.

THE recent inspiring speech of the Prime Minister, dealing with industrial health conditions after the war, has led the civilised world to hope for the dawn of a new era, in which all the resources of science and research will be as strenuously employed in devising means for the preservation of life, health, and happiness as they now are in the invention of instruments of destruction and the production of untold suffering and human misery. The recent Census of physical fitness for military service has, moreover, revealed appalling shortcomings in the physique and health of our nation, which possesses a well-deserved repute as one of the healthiest and most hygienic of all civilised peoples.

This being the case, it is little wonder that the attention of both statesmen and people is turned with one accord to the urgent problem of applying the knowledge of science to the eradication of disease and the evolution of a physically fitter race. If disease caused, as is so commonly erroneously supposed to be the case, an elimination of the unfit, then the recent Census ought to indicate that Great Britain would soon be inhabited by a superbly fit race, for it contains assuredly a sufficient number of people who have been attacked or are now suffering from the ravage of disease, hitherto unsuspected, and unrevealed by our present methods of attempting to bring the doctor in touch with the patient.

But disease is unfortunately no eliminator of the unfit, and never was; it is merely a blind destroyer, like the mechanism of war, and its bullets fall like rain upon the just and the unjust, the fit and the unfit, and maim and slay both alike indiscriminately. The fittest individual to resist and survive in an unhealthy environment may not be the fittest to survive in a healthy environment, and it is the latter, not the former, that is required for the higher purposes of the best civilisation.

Phthisis has deprived the human race of some of its greatest geniuses at the period of their maximum productivity, and the loss to civilisation has been incalculable. At the same time that this disease has robbed the world of men and women of the highest mentality there exists not an iota of proof that the destruction of the millions who have succumbed to it has by one jot improved the physique of any race. Rather by the misery and semi-starvation which have followed the decease of parents the physique of the race has deteriorated, and if tuberculosis could be eliminated the general standard would improve, for susceptibility to the *Bacillus tuberculosis* by no means connotes general physical debility.

Incidence of Phthisis.

During the past few years I have been engaged in a series of efforts to study in how far the rate of incidence of phthisis in the different sections of the community varies with the nature of the employment, and the strain of living conditions, such as indoor and outdoor work, and prolonged or irregular hours of employment. For the purposes of this inquiry I have made many observations of the actual conditions of work in those occupations most heavily hit by this disease during prolonged visits to workshops, and investigations of workmen in such crafts after long periods of overtime; secondly, I have studied statistically and individually the insurance cards since the beginning of operation of the National Health Insurance Act; and, lastly, I have investigated by means of the returns of the Registrar-General the effects of the aggregation in workshops of men engaged upon urban types of labour as distinct from the effects of urban housing as shown by the incidence amongst the female urban populations.

The results of the last-named type of inquiry are so striking and demonstrate so clearly the effects of urban types of employment in increasing the prevalence of phthisis that they deserve some brief description at a time when it is becoming so essential to conserve the young adult male population. The other methods mentioned will only be used incidentally to point out methods by which the evil may be minimised.

It is fairly well known that phthisis destroys more lives amongst males than amongst females, it is less known that this applies only to urban conditions of life and that the exact reverse holds for rural dwellers; nor is it appreciated that the greater death-rate amongst males is entirely due to the modern conditions of factory and workshop life, and did not exist 70 years ago. Again, up to the period when employment begins, or at least began before the war—that is to say, the fourteenth or fifteenth year of life—the death-rate of females from phthisis is about 50 per cent. greater than that of males, and between the tenth and fifteenth years, whether in town or country, the death-rate from phthisis of girls is almost double that of boys.

Until the twentieth year is reached the mortality in both sexes is considerably greater in rural districts than in urban districts, between the twentieth and thirtieth years the conditions become reversed, and after the thirtieth year there commences an enormous preponderance of the disease amongst urban males which is not shared by urban females, and no such disparity is observable between rural males and rural females.

Economic Importance of Mortality from Phthisis.

The enormous importance of these variations may be appreciated from a study of the accompanying graphs, in which the death-rates have been calculated and plotted at different age-periods from the figures given in the last published decennial report of the Registrar-General for the decennium 1891–1900.

It scarcely strikes the imagination when flat rates at all ages for males and females in town and country are given, such, for example, as that, per million living, there die annually 1750 urban males, 1250 urban females, 1317 rural males, and 1240 rural females. But when the death-rates are plotted graphically and it becomes apparent that nearly all the differences lie in the main working period of life between 25 and 65 years of age, and that in this all-important interval rural males and both urban and rural females possess death-rates lying nearly at the same level, while urban males on the average throughout the whole of England *die at double this rate or over*, then it becomes manifest that the sanitarian stands face to face with a great problem worthy of the completest investigation.

When it is remembered that the vast majority of the males of the country are engaged upon urban occupations, it is easily realised that this doubled death-rate from phthisis means an annual loss of several thousand males in the economically most efficient period of life. From this the purely materialistic standpoint alone, each such life is worth some hundreds of pounds to the community, so that the aggregate annual loss from deaths alone far exceeds what it would cost to limit the loss on the lines presently to be proposed. The death-loss alone is, unfortunately, not the only toll, for millions of pounds annually are lost by the incapacity for work of those suffering from the disease. In the next place, these sufferers are a constant source of danger as carriers of disease to those who work or live with them, and if the great excess of phthisis amongst these urban males could be cut off by tackling its causes at their sources, there would doubtless occur a decrease in the incidence of phthisis amongst all the rest of the community.

Lastly, this enhanced rate amongst employed urban males, which is responsible for the death of about one urban male in every five dying between 25 and 65, is one of the causes of disparity in numbers between males and females in the physiologically reproductive period of life. This disparity was sufficiently marked before the war and is now being accentuated by the large loss in young adult male life, so that any influence which can be set to work to reduce the male death-rate from phthisis towards that obtaining amongst females is also highly desirable on sociological grounds.

Causes of the Disparity in Incidence.

Before proceeding to discuss the remedial measures which ought to be set in action, some additional discussion of the causes of the disparity is essential, since these measures themselves must be based upon the true causation of the phenomenon.

In the first place, the enormous difference during the working period of life between urban and rural males is not due to housing conditions, for if this were so similar differences ought to be seen between urban and rural females, but, as the graph shows, no such characteristic difference exists. The form of the curve varies somewhat as between rural and urban females, the maximum death-rate falling somewhat later amongst the town's women, but taken throughout the whole period of life the death-rates are almost identical in value.

Again, if the predisposing factor to the high prevalence amongst urban males were some factor of urban environment not connected with employment this ought to be obvious in the earlier years of life, but up to the twentieth year of life the four curves run fairly close together on nearly parallel courses. In fact, so far as differences exist, males, both urban and rural, are healthier than females, and in the case of both sexes urban dwellers are healthier than rural dwellers. It is quite clear that the difference is not one due to sex, occurring after the twentieth year, for in that case the rural males ought to be up somewhere alongside the urban males, instead of where they actually stand nearly at the levels of both urban and rural females.

The problem under consideration is, then, one which appears in five to ten years after the commencement of employment and persists throughout the working period of life, attaining its maximum between the thirtieth and sixtieth years. It is characteristic of male urban workers, and is inconspicuous amongst urban females, who do not continue to work in factories and large workshops in large numbers after the thirtieth or thirty-fifth year, or at least did not do so in pre-war times, to which these statistics refer.

It might be urged that if the effect is due to urban working conditions it ought to start at the commencement of employment—that is to say, about the fifteenth year. The reply to this is that these records are records of deaths due to a chronic disease, and that some years are required to produce debility and infection and for the disease to run its course to a fatal issue. There are certain occupations in which there is no question of the conditions of labour conducing to phthisis, such as printers, bootmakers, quartz workers, cutlers, grinders, and file-makers. In all these trades there is a latent period of variable length but always of some years' duration, and the form of the curve of mortality from phthisis in such trades conforms in general to that shown in Diagram 1 for all urban males.

It would appear from these considerations clear almost to a demonstration that the greatly enhanced prevalence of phthisis amongst urban male workers is not due to housing conditions, faulty though these may be, for the females, who stay more at home than the males, are not subject to the effects, nor are the males until a few years after they have passed to their occupations. The most obvious cause revealed by a statistical study is accordingly some circumstance, or set of circumstances, connected with the daily occupation.

Observations within the factory of the conditions of work, of the correlated variations in different trades, and a study of the illnesses shown by the Health Insurance cards have convinced me that this is the true cause at work.

The Two Main Factors.

It may be said at once that the two main factors are long-continued strain at work under unhealthy conditions and infection of men so reduced in resisting power by fellow-workmen actually at work alongside them while suffering from open phthisis and disseminating the bacillus of the disease. This is proven by the fact that the heaviest incidences of the disease are found amongst those occupations in which the demand for muscular exertion is so slight that a consumptive worker can still continue at work intermittently until he is in the last stages of the disease and in a highly infectious condition. If such an occupation is carried on in a workshop where the atmospheric conditions are bad, and long and irregular shifts of work, including a good deal of night work, are frequent, and if the workers come into close contact, then the death-rate from phthisis becomes a maximum one. Sedentary occupation alone, even accompanied by long hours of labour, does not lead to an excessive death-rate provided there is sufficient isolation and lack of means of infection. Again, the workers may be crowded together indoors, but if the exertion be sufficiently strenuous to preclude the sufferer from phthisis continuing at work there is not a high occupational death-rate from the disease.

But if the working conditions are such as to favour infection from man to man, and superadded to this there be a close stagnant atmosphere, long hours of labour and much overtime unevenly distributed, eating of meals in common on the premises under unhygienic conditions—in short, all those conditions which reduce stamina and induce mental and physical depression—then a maximum death-rate from phthisis appears.

These conclusions are the result of observations in the workshops of occupations heavily hit by phthisis, and are confirmed by the opinions of employers and employees in such trades. In so far as improvements in the deleterious conditions mentioned have occurred in trades over a considerable period of years, the statistics of the trades unions demonstrate that there have taken place corresponding improvements in the amount of illness and deaths from phthisis. Space will not permit the marshalling of all the evidence which goes to establish the truth of this position, but a few facts may be quoted in illustration from my observations in the different branches of the printing trade.

Investigations in the Printing Trade.

Examination of the obituary lists of the membership of the two large unions of compositors over a period including the 35 years previous to the outbreak of war proves that the relative death-rate from phthisis fell during that interval from one death from phthisis in three total deaths to less than one death from phthisis amongst five total deaths. This improvement far exceeds that seen in the average of all urban males in the same period, and must be ascribed to the better printing shops which now exist, the larger use of printing machinery, and the more regular hours worked. It is thus due to two primary factors: less strain on the workman and less chance of infection.

It is commonly supposed that compositors are the most heavily hit in the printing trades by phthisis. This is not, however, the case, for amongst one unfortunate set of these workers—viz., the operative printers' assistants, *nearly one-half of all the deaths are due to phthisis even in present times.* A close investigation soon discovers the cause of this appalling death-rate. In addition to all the disabilities in the nature of the occupation which cause the high death-rates amongst the members of the other printing fraternities these operative printers' assistants often work long periods of overtime at night. There is a pernicious habit, largely obtaining in this branch, of working an all-night shift in order to turn out weekly papers. This long shift is paid for well as overtime, and the men are so induced to perform it, to the great detriment of their own health. A man taking such a long shift undergoes the following strain. After a full day's work he continues on at work all night, and then goes on again for a full day's work the following day, so completing a continuous working period, save for short meal periods within the works, of 30 hours. Another set of workers, better paid and organised, called machine managers, do not commit this error, but relieve each other after shifts of normal length, and their death-rate from phthisis is only about one-third of that of the operative printers' assistants.

The clearest evidence has been obtained by tracing out many instances that both compositors and printers' assistants ill with phthisis and discharging bacillus-laden sputum go on working intermittently in the printing shops to within a few days of their death.

There were numerous cases discovered of men off work for several weeks with the cause of illness certified as catarrh, and in certain cases these died later after having been at work intermediately, with the cause of death certified as phthisis. Men showing all the facies of phthisis have been observed at work during visits to the workshops in most intimate proximity to other workmen.

In many establishments in the hand-composing section, to save a little space the composing frames containing the type are set back-to-back, so that a consumptive printer can spray the man working opposite to him and facing him at a distance of only 2 or 3 feet. If the latter individual is predisposed to infection from the nature of his work and general environment, it is easy to see how the infection can be passed on.

Instances might be multiplied from this and other trades which would go far to explain why there is such an abnormally high death-rate from phthisis amongst urban males, but, admitting the conducive elements, let us proceed to consider remedies.

The Need of a Medical Service in Factories.

Practical experience in the tackling and successful reduction almost to vanishing point of another type of illness amongst munition workers, which had cost a good many lives and caused much sickness and economic loss of time and efficiency, has convinced me that the urgent necessity is the institution of an efficient factory service of medical men. The doctor must be introduced into the factories and work-

shops to do battle with this evil; he cannot achieve victory by waiting in his consulting room till the patient comes to him of his own initiative. The patient himself is often one of the last to realise that he is seriously ill, and even then has always the *spes phthisica* to buoy him up that he is getting better. The foreman, or shop steward, and his fellow-workmen know much better than himself that he is running down and slowly growing weaker, but all under present conditions are unable to extend aid to him, and so he goes on intermittently working and exposing others to danger.

It is a melancholy picture over which industrial hygiene wrings its hands in vain, while men go on dying who ought to be saved. Yet the problem is not one of colossal dimensions if only statesmen and doctors could be persuaded to tackle it together and mutually assist in its solution.

Even in one of the occupations most heavily scourged by phthisis, such as the printing trades, there is not at any given time more than about one man in between 200 and 300 employed actually ill with phthisis. If these could be efficiently treated and prevented from infecting others, and at the same time general conditions altered in a manner which would involve but little expense, an enormous improvement could be effected.

A national colony containing hygienic dwellings and thoroughly sanitary workshops, which might serve as models for all the rest of the country, could be constructed in which these affected workmen could work at their own occupations, as has already been suggested by Dr. J. E. Esslemont, of Bournemouth. Here as recovery progressed the patient, instead of being suddenly thrust back into the full strain of work under conditions which make for the re-establishment of the disease, could be brought back to full vigour by a graduated course of resumption of his own work, and far fewer relapses would occur. On return to the ordinary workshop he would for a time remain under careful supervision by the doctor of the Industrial Medical Service who had medical supervision of the workshop.

Although such a colony would repay the nation many times over the cost of its establishment, in the present only half-awakened state of the public conscience over health protection it might be considered by statesmen Utopian, or unrealisable on account of opposition of employers and employees.

A fairly considerable amount of acquaintance, and many friendly discussions, with both employers and secretaries of trades unions and foremen of shops, have convinced me that there would be no opposition, but rather the most friendly coöperation, over any practical scheme to improve the health and physique of the workers. All that is required is tact and friendliness and education as to the nature of the scheme and the result aimed at, and then works managers, foremen, and workers become as enthusiastic as the doctor.

Personally, I have always found in research in factories employers willing to spend money in equipment and for experimentation, and workers in most cases willing to undergo considerable inconvenience in experimentation to benefit themselves and their fellow-workers.

Functions of the Proposed Industrial Health Medical Service.

It would be by no means necessary in such an Industrial Health Service for the doctor to make medical examinations of all workers at frequent intervals, as is done, for example, in working the School Medical Service. Such a procedure would arouse opposition, would require an inordinately large medical staff, and would not repay the labour spent upon it. It has always been to me an open question whether too much of the time of the school medical officer is not tediously and monotonously spent in this fashion, and whether more practical results would not be attained by enlisting the services of the teachers and giving the main attention to children who may need aid themselves or be a source of danger to their school-mates.

At any rate, it is from the preventive point of view that I would earnestly urge the formation of an Industrial Health Medical Service, and upon the lines on which I should project it I have estimated that it could be efficiently manned for England and Wales with a staff of about 1500 medical men. This new corps would in no wise interfere with the work of the private practitioner or panel practitioner; its function would be to see, by inspection of factories and by education of those in charge of them, that sanitary conditions in factories were improved, and when resistance or wilful obstruction could not be overcome by other means, then by compulsion securing amendment. Much could be achieved here by a pooled system to raise compensation payment to workpeople turned off for being in enfeebled health or a source of danger to the health of others. It could be made to pay the factory employer to keep his workshops sanitary and his people healthy.

After this survey of material environment the next concern of the factory doctor would be the health of the workers individually, with especial stress upon the preventive side and upon those conditions which precede chronic illnesses. For example, the prospective consumptive patient should, if possible, be caught before he is consumptive; a week or two of rest at the needful moment, when as yet the worker would have had no dreams of going to a doctor, may save many months in a sanatorium later.

Utopian, it may be said—Who will pay the worker his wages while he goes off to take a fortnight's holiday? On the contrary, I claim it will repay both the nation and the employer, the worker and the trades unions' funds, over and over again. The worker is not to be allowed to propose holidays for himself; an entirely unbiased doctor is going to prescribe it on obvious physical signs which no malingerer can induce.

Rarely have I gone into a large workshop containing 200 or 300 workers that I have not observed one or two who ought to have been resting. The neglect of such incipient cases of illness is a foolish, short-sighted policy for all concerned.

The Relations of the Scheme to the General Practitioner.

It has been said above that this new service would be no rival or competitor to the private or panel practitioner; on the contrary, it would be a succour and a support to him. The competitors for private work would be so much the fewer by the number of men willingly drafted into the industrial health service, but none of the insured workers, who are all panel patients, would be withdrawn from the panels. The panel patient with a chronic and oft-recurring illness requiring periods off work under medical treatment is a good asset at present to no one, and least of all to the panel doctor. In fact, it is unfair both to doctors and patients that such chronic illnesses as phthisis should be treated under a panel system of capitation payment. It is an undue risk to ask the doctor to take from the financial point of view, but it is a still graver risk for the patient, since it often involves the loss of his life. How can a panel doctor treat a case of phthisis in a working-class dwelling when the patient, and probably his dependants also, have only an allowance of a few shillings a week to live on and the patient keeps on intermittently going on and off work? It is certainly better than when the patient had no weekly allowance and had to pay his doctor's bill, but even yet it is a disgrace to civilisation and a real live danger to the community and ought to be abolished as soon as possible.

It is such cases that the medical officers of the new corps would seek out early in the workshops and send to suitable sanatoriums attached to the Industrial Health Service. This is not going to cost industry and the country more; it is going to cost less, very much less, than practically unrestrained phthisis is costing, and many thousands of healthy valuable lives will be saved, and countless families spared the greatest sacrifice, followed by grinding poverty.

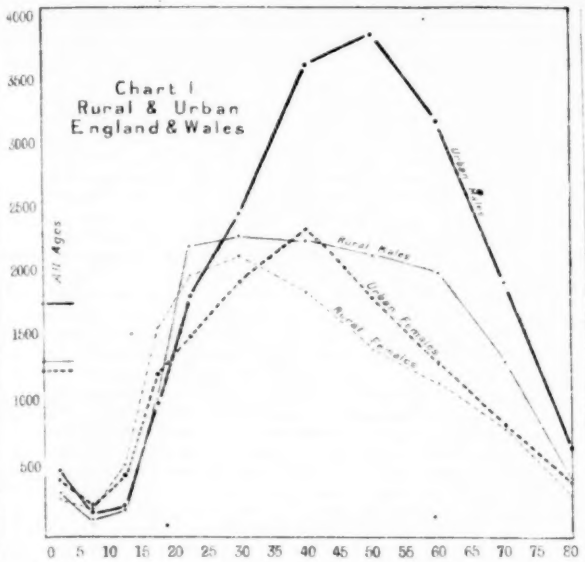
There never was a more opportune moment than is the present for initiating this great reform. Practically all the young medical men that the medical schools have turned out in the past ten years, who are still living, are in khaki carrying on superbly one of the noblest services that medical science has ever rendered to humanity. The majority of them during the past four years have learnt the régime of corps work, preventive work, and hospital treatment, scarcely a man in this young virile force has a practice worth coming home to, and they deserve better of their country than being turned into medical squatters.

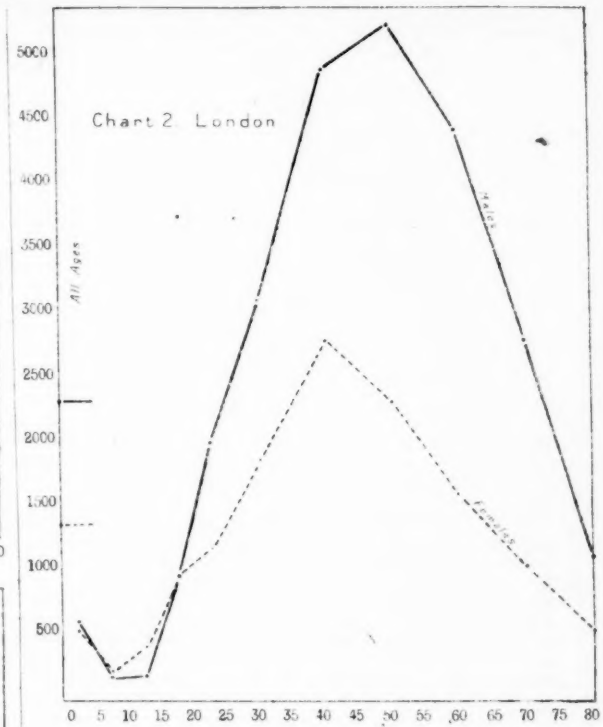
Moreover, as this paper shows, the medical needs of the homeland are crying out for good team-work on the side of preventive medicine, applied not merely to material environment, but to suffering men and women. Many of these young men have been training for just this work that is crying aloud to be undertaken, and most of them probably possess little of either zest or training for private practice.

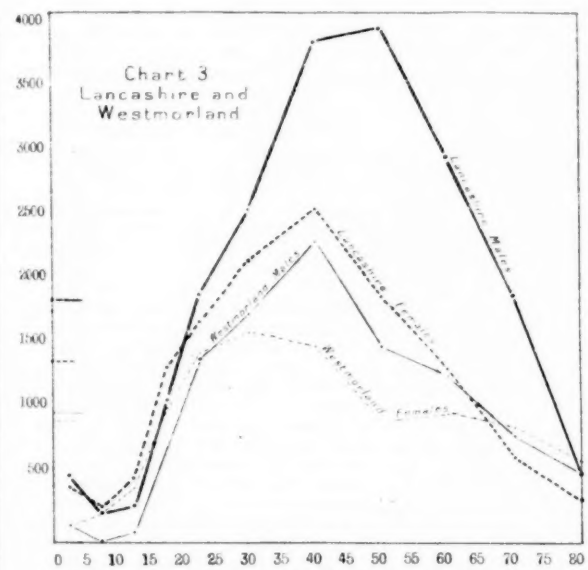
All that is needed is a statesman of power and imagination who will put this scheme in being, and so let Great Britain lead the world to the greatest conquest that has ever been won.

Charts to Illustrate the Difference in the Prevalence of Pulmonary Phthisis between Rural and Urban Conditions.

In all the charts continuous lines show male death-rates and interrupted lines female death-rates per million at the ages shown on the base line. The thicker lines represent urban and the thinner lines rural areas. The horizontal lines at the left of each chart show average death-rates at all ages.







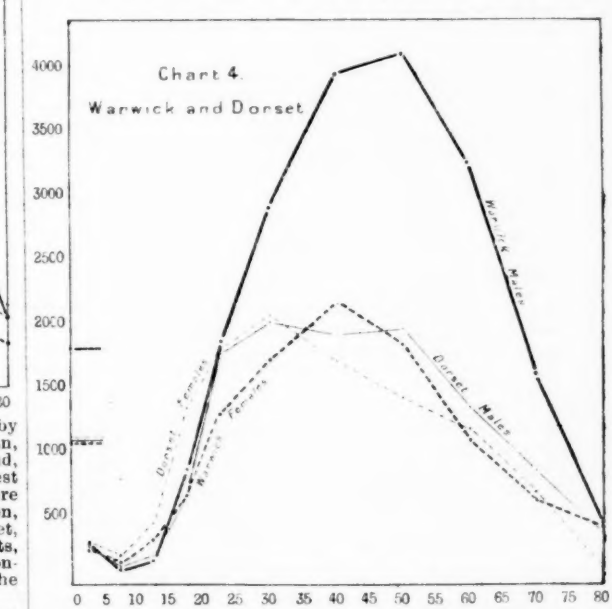


Chart 1 contrasts rural areas with urban areas, as selected by the Registrar-General. The urban areas were Glamorgan, Lancashire, London, Middlesex, Monmouth, Northumberland, Nottingham, Stafford, Warwickshire, Yorkshire (East and West Ridings), with a population of 16,465,427. The rural areas were Buckingham, Cambridge, Cornwall, Hereford, Huntingdon, Lincoln, North Wales, Norfolk, Oxford, Rutland, Salop, Somerset, South Wales (less Glamorgan), Suffolk, Westmorland, Wilts, with a population of 4,265,578. It is obvious that a purer contrast could easily be made with a heightened effect, but still the difference is most striking.

Chart 2 shows the London area, which for clearness is left uncontrasted with other areas to bring into as strong relief as possible the enormous difference between males and females. Whether the cause be that ascribed in this paper or not, here is a matter of national importance.

Chart 3 contrasts Lancashire and Westmorland, the two heavier curves showing Lancashire and the two lighter ones Westmorland. Observe how all four curves run together until about the twentieth year, and then how Lancashire males alone soar in death-rate away from the others.

Chart 4 shows the same for Warwickshire and Dorset, and exactly the same holds for the West Riding and North Riding of Yorkshire. It is, in fact, a universal rule that in typical rural districts death-rates of males and females lie close together, whilst in urban districts the male death-rate is double that of the female or higher.

The four charts given are selected to illustrate differences between rural and urban conditions. Many others could be given, and the statistics of the whole country prove the enormous effects of

urban conditions of labour upon male deaths from phthisis. The differences are in no sense geographical, for rural areas in Lancashire can be picked out which are as healthy as Westmorland, and in Warwickshire as healthy as Dorset. Even Middlesex as contrasted with London is a healthy district. All four charts are plotted to the same scale, and hence it is to be observed that the female death-rate in London is higher than elsewhere. The difference is, however, small compared to the male death-rate. It may be due in part to a larger percentage of females in London between 30 and 50 years of age being employed in factories and in part to overcrowded housing.

WHAT ARE THE DISABILITIES AND THE COMPENSATIONS ENTAILED BY THE REPRODUCTIVE FUNCTION ON THE FEMALE?

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To answer the above question it is well to commence with the consideration of such obvious anatomical differences as exist between the sexes. Subsequently the physiological variations can be discussed as fully as our knowledge will permit.

In 1887, at the late Dr. Matthews Duncan's request, I read a paper before the Obstetrical Society of London entitled "What are the Chief Factors which Determine the Differences which Exist in the Form of the Male and Female Pelvis?"[1] In that I showed for the first time that besides the already recognised variations in the shape of the pelvis in the two sexes there are many other differences in the form of the skeleton which exist for the purpose of accommodating the fœtus. They all entail a considerable depreciation in the mechanical relationship of the woman to her surroundings, and so render her less fit than man to perform any laborious function, and in savage life to defend herself from her enemies. I will briefly recapitulate these differences.

Anatomical Differences.

The chest of the woman is shorter than that of the man, while the abdomen is correspondingly longer.

Her sternum is shorter. The manubrium bears a very much larger proportion to the gladiolus, which is less than twice as long as the manubrium. In man the gladiolus is always more than twice as long as the manubrium.

The arcs of the upper ribs are relatively much larger in the female, while the first intercostal spaces are very much wider. As the result of this the capacity of the upper part of the female thorax is relatively very much greater than in the male.

Besides the fact that the sternum is much shorter in the female, the number of costal cartilages which articulate with it are usually seven with a tendency to less than seven, and the lower cartilages are attached very much more obliquely to the sternum, and therefore have a less secure hold upon it.

In the male, while seven is the usual number, the tendency is for more than seven cartilages to articulate with the sternum, while their direction is such that they hold the sternum in a much more secure grip than is the case in the woman, and so increase the strength of the chest most materially. The lower ribs are relatively shorter in the female, and this, combined with the fewer number of costal cartilages which articulate with the sternum and their greater obliquity, render the lower part of the woman's chest much less capacious than that of the male. The reason of this is obvious. During the time the abdomen is occupied by the fœtus in the later months of pregnancy the respiratory capacity of the lower segment of the chest is considerably reduced, so that a correspondingly greater change must be carried on in the lungs in the relatively more capacious upper thorax. This explains the mode of respiration which is peculiar to the sex. The arrangement of the lower chest also permits of its lateral expansion by the pregnant uterus.

[1] Trans. Obstet. Soc., 1887.

The male and female types of thorax are exaggerated in the case of cervical and bicipital ribs. These conditions are very well illustrated in a paper entitled "Cervical and Bicipital Ribs in Man," which I published in the Guy's Hospital Reports, 1883.

In most attitudes the clavicle forms a lever of the second order. Its fulcrum is situated at the sterno-clavicular joint, the power is applied at its outer extremity, while the weight is transmitted through its impact on the first, and later on the second, costal arch to the sternum, and through the sternum and cartilages and ribs articulating with the sternum to the spinal column. When both clavicles are heavily engaged the chest is fixed and respiration is carried on through the action of the diaphragm. Man is therefore able to lead a very much more vigorous and laborious life, and to do so with the expenditure of much less energy than the female, who is seriously handicapped by the modification in the mechanics of her chest that the necessity of accommodating a fœtus in her abdomen entails.

The increase in the length of the abdominal cavity, the greater area of the abdominal wall, and the greater size of the pelvic cavity, all reduce that muscular pressure which is exerted more advantageously in the male upon the intra-abdominal viscera, retaining them in place, and opposing the tendency to prolapse which occurs when the erect posture is assumed. In civilisation this tendency to prolapse of the viscera is accentuated in the female by the use of the corset, which approximates the long flap-like sides of the lower chest with the same facility that the pregnant uterus separates them from one another. The greater capacity of the female pelvis favours the accumulation of material in the pelvic colon and the tendency to its elongation which forms the basic factor in chronic intestinal stasis.

I have no doubt that the variations in the liability to disease of the several abdominal viscera in the two sexes depend on the differences which exist in the mechanical relationship of the organs to the surrounding skeleton and muscle wall.

The greater rigidity of the abdominal wall in man, with the corresponding cramping of the contained viscera, favour kinking at the duodeno-jejunal junction and the consequent distension and ulceration of the duodenum and stomach, and later the development of cancer in the latter organ. The greater laxity of the abdominal wall in the woman which frequently appears at a comparatively early period in her sexual life, and the associated corresponding mobility of the contained viscera, while increasing the infection of the contents of the small intestine, diminish the tendency to angulation at the duodeno-jejunal junction and the consequent ulcerative changes in the duodenum and stomach. It is well to remember that the degree of rigidity of the abdominal wall varies in both sexes, but particularly in the female, at the different periods of life, and to a great extent with pregnancy. The greater mobility of the liver in the woman, especially about middle life, tends to reduce the strain experienced by the lesser curvature of the stomach and the frequency of the formation of ulcers in that situation. On the other hand, it favours stagnation of the contents of the prolapsed gall bladder and the more ready formation of gall stones, which occur in the woman four times as often as they do in man. The same mechanical conditions permit of an abnormal mobility of the kidney in the woman.

The following proportions which I have obtained from the statistics of the Mayo Clinic are very suggestive. 75 per cent. of peptic ulcers are duodenal; 11 per cent. of patients with gastric ulcer have duodenal ulcer; 3·2 per cent of cases of duodenal ulcer have gastric ulcer; more than 30 per cent of all cancers in man are in the stomach; cancer of the stomach occurs in the proportion of 38 per cent. in the male to 22 per cent. in the female; 85 per cent. of all cancers and ulcers in the stomach involve the lesser curvature; diverticulitis occurs in the proportion of 66 per cent. in the male to 33·4 per cent. in the female; and cancer of the rectum is a little more common in the male. With a view of demonstrating the mechanical factor more clearly I have attempted to obtain further details as to the incidence of disease at different ages in the two sexes, but without success.

The Part Played by the Thyroid Gland.

As regards the various organs of the body, that one which is most closely associated with the sexual function in the female is the thyroid gland. The variations in the size of the

thyroid afford clear confirmation of the preponderating influence of sex in the woman as compared to the part it plays in man.

The thyroid enlarges periodically during the whole period of the woman's sexual life. This is more marked during the few days preceding menstruation, and continues while the period of sexual desire is at its height. After this the thyroid diminishes in size, and with this decrease there is a corresponding loss of the appetite. In some cases it may amount to a strong dislike for intercourse at this period. This condition exists all through the sexual life of the woman, but in our race it is much more marked between the ages of 19 and 23. The enlargement of the thyroid is accentuated by intercourse and still more by pregnancy. The thyroid and the ovary would appear to go through associated stages of activity and rest.

One of the most marked features in advanced cases of chronic intestinal stasis in the woman is the total absence of sexual desire, it being replaced in many instances by a feeling of disgust for intercourse. Associated with this there is in this disease great wasting of the thyroid gland. This wasting is most conspicuous in the isthmus, which cannot be detected by the finger though the rings of the trachea can be accurately and clearly defined.

McCarrison has pointed out in his classical work that the administration of thyroid extract is occasionally followed by pregnancy. Imperfect development of the thyroid is associated with a corresponding condition of the sexual apparatus. According to McCarrison, "total loss of thyroid secretion causes failure of development of the sex organs and a condition of infantilism. In subthyroidic girls the ovaries and uterus either remain infantile when menstruation is not established, or these organs develop late, resulting in amenorrhœa."

How far the thyroid varies in size in the circumstances already described in women whose hair is towy or red, as compared with the variations in women with dark hair, I cannot assert positively, but I have formed a very definite opinion that it alters with the intensity of the sexual appetite, which is certainly a more marked feature in women of this coloured hair than it is in the brunette. It is obviously the case that this type of woman resists the poisonous influences of chronic intestinal stasis with much more vigour and that she retains her sexual appetite up to a later stage in that disease than does her dark-haired sister. Perhaps one of the most remarkable effects of freeing the ileal effluent in chronic intestinal stasis by the removal of the colon is the rapid return of sexual desire, which may have been lost for some considerable time. Not only does it return to normal conditions, but in many cases it becomes manifestly exaggerated, and may be a source of anxiety to the individual as well as to others.

This all points to the fact that woman's thyroid plays a very important part in her sexual life, far in excess of what it does in man. Therefore the strain exerted upon that organ is very distinctly greater than it is in man, and in consequence it is much more liable to undergo changes under that stress which result in degeneration and in the development of a varying degree of myxœdema. In the female the toxins or organisms which are derived from the intestine in chronic intestinal stasis produce by their influence on the overstrained thyroid, directly through its blood-supply or indirectly through its nerve-supply, a far greater change than in man, and this occurs during the period of greatest sexual activity. The incidence of exophthalmic goitre in the two sexes affords a very good illustration of the truth of this view. 30 per cent. of the cases occur in women between the ages of 20 and 25. Murray found that it arose 18 times more often in females than in males, while Mackenzie estimates the proportion as 9 to 1. Personally I would make the proportion very much higher than either of these observers, as I believe that a number of trivial cases escape observation and recognition.

McCarrison has shown that up to the age of puberty the sexes are affected by endemic goitre almost equally. From the age of puberty onwards females are much more liable to suffer than males. He finds what he calls the simple toxæmic goitre as we see it in this country to be incomparably more common in the female than in the male. He also insists on the serious damage which the infant sustains from the presence of any form of toxic goitre in the mother.

Two Factors in the Sexual Life of Woman.

I have here dealt with the function of the prostatic fluid as it affects the female, but it is too large and too complicated a question to discuss adequately in a paper like this.

In the sexual life of the woman we have got to consider two factors. One is the action of the prostatic secretion on the woman and the other is that of pregnancy.

The prostate would seem to exert a double function. It provides an internal and an external secretion. The former by its effect on the man acts as a powerful stimulant, while the action of the latter on the woman is very far-reaching and active in its results. It can be readily gauged by its effect in cases of chronic intestinal stasis, for which it would seem to provide a natural antidote. It is easy to tell by examining her breasts whether the static woman is being deprived of the advantages which the prostatic secretion affords.

Except in the case of those women with red or towy-coloured hair, the upper and outer zones of the breasts of women affected with this disease are hard and nobbly, this process tending to spread to the rest of the organ. This condition, I have shown, renders the breast very liable to cancerous infection. If the supply of prostatic secretion is in sufficient quantity this hardness does not develop, or, if it already exists, it will subside or disappear altogether. The same applies to many of the other obvious evidences of chronic intestinal stasis, a condition which is very common indeed in our civilised community.

That the secretion of the prostate exerts a most beneficial effect on the woman I have been able to demonstrate on innumerable occasions in static patients. Its action also on the apparently moribund spermatozoa is most striking. Several years ago I suggested its use in tabloid form. These extracts were made in Chicago and have been used very largely and apparently with much benefit.

Pregnancy affords the static woman with the prolapsed, angulated, and dilated gastro-intestinal tract, who exists in enormous numbers in the community, an opportunity of rehabilitating herself by re-establishing temporarily the normal flow of the intestinal contents, and so permitting her to store up in her body such a quantity of fat and muscle as will serve to retain her viscera in their correct positions and functions.

How often does one see a poor thin static virgin converted into a plump, healthy, happy mother by a pregnancy? How often is the surgeon called upon to perform operations of a more or less mutilating character upon the breasts and intestinal tract of women who, if they were able to perform the normal functions which they were born to carry out, would be restored to a state of health and happiness instead of leading lives of necessarily increasing invalidism and being a nuisance to themselves and to those with whom they are brought in contact?

THE PHARMACOLOGY OF ALCOHOL.*

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I INTEND to confine myself to the pharmacological action of alcohol in the narrow sense of the word pharmacological and to consider the action of alcohol as a drug. The actions and uses of alcohol in medicine may be summarised under four heads: (1) Local action on the skin, mucous membranes, and raw surfaces; (2) reflex actions on the body when applied to accessible mucous membranes; (3) action on digestion; and (4) actions after absorption into the blood.

Local Action of Alcohol on External Surfaces.

Its action on the external surface depends upon its volatility, its affinity for water, its power of coagulating proteid, and its antiseptic action.

Owing to its volatility it is an almost invariable ingredient of cooling lotions when allowed to evaporate freely from inflamed surfaces. Somewhat paradoxically the same property determines its inclusion in most liniments and other preparations intended to irritate the skin, for when the alcohol

* Part of a paper read before the Society for the Study of Inebriety on Oct. 8th, 1918.

is not allowed to evaporate the vapour easily penetrates the skin and irritates the sensitive and highly vascular tissues beneath the horny epidermis. Its affinity for water causes it to harden the tissues by extracting water from them, and this hardening effect is increased by the coagulation of the proteid in the still unkeratosed or partially keratosed cells of the deeper layers of the epidermis. In a more dilute form the same properties are used in astringent gargles and lotions.

The antiseptic properties of alcohol are responsible for the existence of a great part of our museums of natural history, anatomy, and pathology, and although inferior in degree to many other antiseptics they add largely to its value as a local application. The fact seems too little known that the most powerful antiseptic effects are produced, not by absolute alcohol, but by alcohol of from 40 to 70 per cent.[1]

Reflex Actions of Alcohol.

The reflex actions which follow the local application of alcoholic solutions of a strength of 20 to 25 per cent. or over to the mucous membrane of the lips, mouth, and pharynx are of considerable importance because it is largely to these actions that alcohol owes its popular reputation as a stimulant. Its action is that of a local irritant and on a par with the action of ammonia or strong acetic acid and many other volatile irritants. The effects observed are a rousing of the latent consciousness, an increase in the movements of respiration, an increase in the force and frequency of the heart—in short, a hastening of the recovery.

That these results are reflex is shown by the fact that they begin at once, long before any of the alcohol can have been absorbed; that they occur even when none of the drug is swallowed but merely retained for a short time in the mouth and then rejected; that they are proportional to the strength of the alcohol and not to the quantity, a few drops of strong alcohol merely applied to the lips is often effective, while a considerable quantity of dilute alcohol produces little effect, even if swallowed; finally, they do not occur if alcohol is injected directly into the circulation in animals.[2]

The effects are also of a very temporary character and pass off in about ten minutes unless the alcohol is swallowed, when they may persist for half an hour, probably owing to the additional reflex from the mucous membrane of the stomach. I think much confusion has been caused in the discussions upon the action of alcohol by the failure to distinguish sharply between these reflex effects common to all volatile irritants and the effects of alcohol after absorption.

The Action of Alcohol on Digestion.

The action of alcohol on digestion is made up of two factors—viz., its action on the stomach and its action upon the stomach contents. The former is a combination of its local action on the walls of the stomach with the effects of its reflex action; the latter is purely chemical and due to the action of the drug upon the gastric secretions and upon the constituents of the food.

It appears to be established that in dilutions up to 5 per cent. no deleterious effects are produced upon the action of the digestive ferments, nor any hardening of the proteid food which would make it more slowly digested. In this dilution the activity of gastric digestion is increased (1) by the action of the alcohol upon the mucous membrane of the mouth and pharynx, causing a reflex flow of saliva and gastric juice; and (2) by its local action upon the mucous membrane of the stomach, causing increased vascularity and a further flow of gastric juice.

The stomach is practically a closed cavity with a temperature of 98·6° F., and no matter how dilute a solution of alcohol may be, the alcohol will be partially vapourised at this temperature, and that part of the stomach unoccupied by food will contain a comparatively concentrated alcoholic vapour which is a marked irritant to a delicate mucous membrane. I believe this is the cause of the feeling of warmth in the stomach which usually follows the taking of even small quantities of alcohol, and that it is the vapour rather than the alcohol in solution which acts as an irritant and causes the increased vascularity. The rapid absorption of alcohol from the stomach—as compared, for example, with water—is probably also due, in part, at any rate, to the alcoholic vapour diffusing rapidly through the delicate epithelial cells of the mucous membrane.

In concentrations over 5 per cent. almost all observers are agreed that alcohol delays digestion by interfering with the action of the digestive ferments and possibly hardening the proteids of the food, while strong concentrations set up an actual catarrhal inflammation of the stomach, as was demonstrated many years ago by Dr. Beaumont in the classical case of Alexis St. Martin.

The increased movements of the stomach supposed to be set up by alcohol and so aid digestion have not been demonstrated by the more recent experiments, and it is doubtful if they occur in the case of dilute solutions. In certain concentrations, however, alcohol acts like a volatile oil, regulates peristalsis, relieves spasmodic pain, and removes flatulence.

Action of Alcohol after Absorption.

It is now universally admitted that the main action of alcohol after absorption is on the central nervous system, and I think it is also admitted that the action of large doses is always a depressing or paralysing action. The various centres are affected in the inverse order of their development so that the first to go are the highest centres of judgment and emotional control, comparison, and inhibition. Those inhibitory centres which are so constantly in action in all civilised communities to restrain the inclinations and impulses of the natural man are early affected, and as civilisation becomes more complex and life more intricate, these inhibitory centres are sometimes strained to breaking point. In such cases alcohol may benefit a patient by giving his inhibitory centres a rest and time for recuperation. Released from the habitual control of the higher centres the lower centres tend to become more purely reflex and to over-act in response to various stimuli, giving rise to that increased activity, muscular or emotional, which, together with the reflex effects already considered, is responsible for the popular conception of alcohol as a stimulant. As the action of the alcohol proceeds these lower centres are themselves paralysed and the paralysis spreads to the still lower motor centres, then consciousness itself is lost and the full action of alcohol as a narcotic poison is manifested.

The question is, however, more difficult in the case of the small doses of alcohol usually given for therapeutic purposes. The study of the various published researches leads me to the conclusion that so far the case for any preliminary stimulant action of alcohol on the central nervous system is not proven, and that all the phenomena attributed to such action can be equally well explained by assuming the action of alcohol to be consistently depressing throughout.

I cannot now go into the subject of the anatomical basis for the action of alcohol upon the brain cells—whether it is directly upon the cell protoplasm itself, or in combination with the lipoids of the brain cells, or upon the dendrites so as to interrupt communication of impulses from neuron to neuron; any or all of these hypotheses are possible. It appears, however, to be certain that the neurons of centres having certain functions are more sensitive than others, and probably the relative sensitiveness of the centres may vary somewhat in different individuals. With small doses, not sufficient to cause noticeable excitement, painful sensations are less acute and sources of mental worry, anxiety or irritation no longer occupy so large a place in the field of consciousness; there is consequently a feeling of euphoria or general well-being, and a tendency to drowsiness or actual sleep if the environment is favourable. It is this sedative influence which is often so valuable in dangerous and exhausting illness, and the judicious use of alcohol may suffice to turn the balance in a debilitated and despairing patient. I wish to lay stress on the fact that this effect is obtained by small doses, and is not preceded by any indication of a preliminary stimulation unless the drug is given in sufficient concentration to cause a temporary reflex effect.

Effect on Heart and Blood-Vessels.

The action of alcohol on the circulation after its absorption into the blood has been carefully worked out by experiments upon animals. The results are not entirely in accord, but the conclusion we are forced to come to is that there is no proof from these experiments that alcohol present in the blood in any concentration compatible with the amount given and with the symptoms exhibited has any action on the heart or blood pressure sufficiently marked to be of importance in therapeutics. The presence of alcohol in the blood to an extent of 0·1 per cent. causes definite symptoms of intoxication, and when given in therapeutic doses where such symptoms are never produced the quantity in the blood must be less than this amount.

While evidence of stimulation is absent, one result of perfusion experiments upon the isolated heart by Loeb,[3] Dixon,[4] and Hamill [5] is worthy of notice—viz., that in an exhausted or feebly-beating heart the addition of small quantities of alcohol to the perfusing fluid causes an improvement in the beat, and at the same time some of the alcohol was removed from the perfusing fluid, having apparently been utilised by the heart muscle as a source of nourishment. The improvement in the circulation clinically observed in cases of exhausting disease is probably due to a similar action, combined with a sedative action on the nerve centres which regulate the action of the heart, and also to a diminution of pain and anxiety.

The effect upon the pulse-rate in healthy men appears to vary with the individual, and when the disturbing influences of movements and excitement are avoided, as in the experiments of Higgins,[6] an increase of 1 to 4 beats per minute was found in 45 per cent. of the experiments, and in 55 per cent. no acceleration occurred.

The most marked effect of alcohol upon the blood-vessels is seen in the skin. The flushing is due to a paralysis of the muscular fibres in the walls of the small vessels which results in the capillaries being distended with blood; when frequently repeated a permanent enlargement of these vessels ensues. The increased amount of blood in the skin may relieve a possibly dangerous congestion in certain cases, and also promotes perspiration. Most important, however, is the effect of this dilatation of the superficial vessels upon the temperature of the body. Alcohol is a cooling agent; the large amount of warm blood in the skin rapidly loses heat. The increased heat production due to the oxidation of the alcohol in the body is quite inadequate to compensate for this loss of heat. When it is desired to increase directly the heat loss from the body and at the same time relieve congestion of internal organs and calm the nervous system alcohol may be used as an antipyretic drug: but the danger, now so well known, of the use of alcohol before exposure to cold must never be lost sight of.

Other Effects.

Apart from its reflex effects alcohol has singularly little action upon respiration; this question, after the careful work of Higgins,[6] may be considered settled. The same may be said of its action upon the kidneys. This, of course, does not imply that large quantities of alcohol, or alcoholic beverages containing other constituents, have no action on the respiration and kidneys; indeed, the contrary is the case, but this action has no bearing upon the use of alcohol as a drug. Upon the action, if any, of alcohol upon those small but important structures, the endocrine glands, we know nothing.

As to the influence of alcohol upon the various infection diseases, the possible concentration of alcohol in the blood, even in a state of intoxication, rarely exceeds 0·25 per cent., and 0·6 per cent. is usually fatal. This concentration is quite insufficient to have any antiseptic action upon pathogenic organisms. Alcoholic subjects with degenerated tissues are well known to fall easy victims to infectious diseases, and there is considerable evidence that even in non-alcoholic subjects a dose of alcohol will lower the resisting power to infection by the pneumococcus, *Streptococcus erysipelatosus*, *Staphylococcus pyogenes*, and probably *Diplococcus rheumaticus*.[10 11] There is some evidence that alcohol has some power to neutralise the toxins produced by the *Bacillus typhosus*, the *Bacillus coli*,[7] and the tubercle bacillus.[8 9] Much further work is required on this interesting and important subject.

The alcohol circulating in the blood is gradually burnt up in the body, and by its combustion it supplies heat and energy; as the rate of oxidation is comparatively slow it serves the purpose of a food for some considerable time, but with therapeutic doses 95 per cent. is burnt up in 24 hours and only 5 per cent. excreted. The amount which can thus be utilised is strictly limited, and an increase in the amount taken does not lead to a more rapid oxidation; for example, Higgins found that 45 c.cm. is not burned at a faster rate than 30 c.cm.—the former required 12 and the latter 8 hours.

The careful experiments of Neumann [12] have shown that alcohol up to 100 g. daily can replace a chemically equivalent amount of fat in the dietary. 1 g. of alcohol gives 7 calories, compared with fat 9·3 and sugar 4·1. As much as 40 per cent. of the carbohydrate needs of the body can be supplied by alcohol, and a still larger proportion in the case of a patient confined to bed.

The value of alcohol as a food must be discounted by its concomitant actions as a drug. There is no doubt that it is not a necessary food in health; whether it is a desirable food is largely a matter of opinion, but there can be no doubt that there are conditions of disease where its sedative action on the nervous system may be desired and where the digestive functions are in abeyance. Here a form of hydrocarbon of high calorific value, which requires no digestion, is quickly absorbed, and readily oxidised may be of very considerable value, and on this account alcohol may be preferred in such cases to other narcotics of greater potency, but which lack any nutritive properties.

Therapeutic Considerations.

I have now enumerated all the actions of alcohol which can be utilised in the practice of medicine; and powerful as these actions are I want to lay stress upon the fact that we have no proof of any direct stimulating action of pure ethyl alcohol upon the functions of the body after absorption. A substance which possesses such powerful actions may be approved or disapproved, but cannot be ignored as a drug, and our knowledge of the true place of alcohol in therapeutics would soon be largely increased if it were always prescribed with a definite aim and an exact idea as to what it was expected to do in any particular case, and not in that vague indefinite way in which it is sometimes the custom to order so-called stimulants.

For therapeutic purposes I should place the dose at the equivalent of from 20 to 180 c.cm. of pure ethyl alcohol in the 24 hours, and I doubt whether any further benefit can be obtained by more than the latter amount, even in subjects already habituated to alcohol.

The alcohol can often be prescribed with advantage as 50 per cent. alcohol (proof spirit) made up like any other powerful drug in a mixture with such disguising agents as tinct. gent. co., tinct. card. co., tinct. cinchon. co., or spir. chloroformi.

So far I have considered only the effects of pure ethyl alcohol, and I hesitate to enter upon the difficult and debateable ground of the actions of the various alcoholic beverages as compared with pure alcohol; for some purposes they may be better and for others worse owing to the presence of other constituents, but exact knowledge on these points is still lacking. These other constituents include a number of volatile substances, some the higher alcohols, and others the so-called ethers, of the constitution and action of which we know little; wines and beers contain in addition sugars, gums, organic acids and their salts, tannins, bitters, and colouring substances. How far and in what manner these substances modify the action of ethyl alcohol requires investigation.

In experiments upon animals the action of the potable spirits is essentially that of ethyl alcohol and proportional to their alcoholic content, therefore any difference observed in their action on man must be due to an action upon those brain centres which are not developed in the animals used for experiment. Part at any rate of the difference not infrequently noticed between the effects of different alcoholic beverages may be due to the specific stimulation of olfactory nerve-endings. We all know how extraordinarily powerful an odour is in reviving old memories and starting trains of association in our consciousness. Possibly some of the differences noticed in the relative effects of different alcoholic beverages may be due to the effects of the volatile odoriferous constituents arousing different trains of association.

I am of the opinion that it would be of advantage to the community if all distilled spirits were looked upon and used as drugs only.

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Manchester.

A FURTHER INVESTIGATION INTO THE AGGLUTINATING PROPERTIES OF CERTAIN SERA AGAINST *B. TYPHOSUS*, *B. PARATYPHOSUS A* AND *B.*[1]

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THE following is an account of the results obtained with 227 [2] sera of antityphoid-inoculated men tested by the Oxford method. The material was obtained from the same source as that which was the subject of a previous paper.[3] The sera had been sent from the Military Hospital, Portobello, to this laboratory, University College, Dublin, National University of Ireland, for the Wassermann test, and had been taken from men who had received antityphoid inoculation. None of these cases were suffering, or had recently suffered, from enteric fever. Information was procured as to the number of inoculations together with the date of last inoculation which the man had received, but no data as to the type of vaccine employed were obtainable. As regards agglutinins for *B. typhosus*, the results obtained with the sera of 269 inoculated men previously examined and reported on are included. The standard cultures were kindly supplied to me by the Director of the Standards Laboratory, Oxford, whom I have to thank for a very regular and liberal supply. The research was carried out under the supervision of Professor E. J. McWeeney, and I have to express my indebtedness to him for many valuable suggestions.

Agglutination Results with B. Typhosus.

In Table I. are set down the results obtained with 227 sera of the present series of cases together with 269 specimens which formed the subject of a previous communication. This gives in all the results of the examination of 496 sera of inoculated men. From this it will be seen that:—

1. The number of sera which failed to agglutinate Ty.,[4] designated as 0 units, increase as the time since last inoculation is prolonged—viz., 10·9 per cent., 11·5 per cent., 14·6 per cent., 12·8 per cent., 15·9 per cent., 24·0 per cent., 8·0 per cent. (few sera), and 23·9 per cent. at the various three months periods. It will be noticed that there is a sudden increase in the number of negative sera at the end of 15 months.

2. The highest number of units is obtainable during the first three months since inoculation, 4·8 per cent. giving 650–1250 units. After three months since inoculation no sera came into the 650–1250 units group, and only a small percentage, 0·9 per cent., came within the 350–650 unit group. This indicated a sudden drop in high titres after the third month. In the three groups 7–9, 10–12, 13–15 months—i.e., between the seventh and fifteenth month since inoculation, no serum reaches 350–650 units, but there are a good many (4 per cent., 4·6 per cent., 2·2 per cent.) to be found in the 150–350 unit group. After 16 months none of the sera reached the 150–350 unit group. As might be expected, as the number of sera giving high titres diminish, the figures for the lower titres increase—e.g., under the group 3–15 units, reading down, the figures in the column for the time periods since last inoculation are 9·7 per cent., 26·5 per cent., 24 per cent., 31·4 per cent., 45·4 per cent., 44 per cent. and 48 per cent.

From a study of these 496 sera it would appear that, in so far as agglutinins may be taken as an index to immunity against infection, during the first three months since inoculation immunity is high, from 4–15 months it is moderate, and after 15 months it is poor. After 15 months the number of negatives increases, and among the positive sera the titres are low. To secure immunity, therefore, the inoculation should be repeated after the lapse of not later than 15 months.

[1] Abridged from a report to the Medical Research Committee, read before the Section of Pathology, Royal Academy of Medicine in Ireland.

[2] These 227 are taken from a batch of 421 specimens examined in connexion with parallel Bordet-Gengou tests carried out by my colleague Dr. W. D. O Kelly.

[3] THE LANCET, 1916, ii., 970.

[4] For the sake of simplicity *B. typhosus*, *B. paratyphosus A* and *B* will be referred to as Ty., A, and B respectively.

TABLE I.—*Agglutination Results with* B. Typhosus (*This and Last Year Combined*).

Months since last inoculation.	No. of sera.	Agglutinin units.							
		0	3–15	15–35	35–65	65–150	150–350	350–650	650–1250
1–3	82	10·9	9·7	15·8	17·0	21·9	12·1	7·3	4·8
4–6	113	11·5	26·5	15·9	24·7	14·1	6·2	0·9	—
7–9	75	14·6	24·0	37·3	14·6	5·3	4·0	—	—
10–12... ...	86	12·8	31·4	18·6	22·1	10·4	4·6	—	—
13–15... ...	44	15·9	45·4	20·4	13·6	2·2	2·2	—	—
16–18... ...	25	24·0	44·0	16·0	12·0	4·0	—	—	—
19–23... ...	25	8·0	48·0	36·0	4·0	4·0	—	—	—
24 and over	46	23·9	32·6	26·0	10·8	6·5	—	—	—
—	496	14·1	28·4	21·9	17·5	10·6	5·0	1·4	0·8

The Effect of Multiple Inoculation with B. Typhosus *Vaccine.*

A chart was constructed giving the agglutination results obtained with *B. typhosus* with the sera of men who had been inoculated once, twice, and three or more times. The chart would seem to show that (1) fewer non-agglutinating sera are met with in multiple inoculation, particularly during 16–24 months after inoculation; (2) multiple inoculation does not produce such a high response as the first single inoculation, but, on the other hand, in the sera of men who have been inoculated several times a high agglutinin content is persistent. The result of one inoculation might be compared to the brilliant, though not permanent, effect of a large single dose of salvarsan in a case of syphilis, as compared with the slow, but more permanent, improvement brought about by smaller doses frequently repeated.

The Effect of Typhoid Mixed "T.A.B." Vaccine on the Typhoid Agglutinin Titre.

It is stated in the directions issued with the Oxford standard cultures that an attack of paratyphoid fever may raise, either slightly or markedly, the artificial typhoid agglutinins already present in the serum of an inoculated individual, apart altogether from the production of specific paratyphoid agglutinins. Arising out of this statement the question presents itself—granting that a man has already received *B. typhosus* vaccine, if he be now injected with mixed T.A.B. vaccine, will his artificial typhoid agglutinins be raised to a higher point and will they become more lasting than if he had received a second dose of simple *B. typhosus* vaccine only? If this were the case, inoculation with T.A.B. vaccine would be actually preferable.

Unfortunately, in the present series of cases no details as to the type of vaccine employed for inoculation were obtainable, but it perhaps may be fairly assumed that the men whose sera agglutinated A or B, or both, as well as Ty. had received mixed T.A.B. vaccine, whereas those which agglutinated Ty. only, had only received simple Ty. vaccine. None of these cases had a history of recent typhoid or paratyphoid fever, so that the presence of natural agglutinins could be excluded.

With the above point in view Table II. has been drawn up. The sera are arranged under four heads: (1) Those sera which agglutinated Ty. only; (2) those which agglutinated both Ty. and A; (3) those which agglutinated Ty. and B; and lastly (4) those which agglutinated all three. The sera which failed to agglutinate any of the micro-organisms have been omitted from the list. The figures in these columns indicate the average agglutinin units (i.e., the total number of units divided by the number of sera examined) for Ty. in all cases, and they are further arranged according to the number of months since last inoculation.

It will be noticed that the Ty agglutinin content is higher in mixed vaccine cases, at practically all periods, than was obtained in cases inoculated with simple Ty. vaccine (first column) This marked difference between the Ty. agglutinin content of sera of persons who had received simple Ty. vaccine and mixed T.A.B. vaccine may be due (1) to the typhoid element in T.A.B. vaccine; (2) to the A and B elements together; (3) to the A or B elements individually.

Before determining whether this relatively high Ty. agglutinin content is due to the A or B constituents it is necessary to make sure that we are not comparing, in the first column, the sera of men who have received but one dose of Ty. vaccine with the sera of men in the other columns, who have, in all probability, received the T.A.B. vaccine as a second dose (T.A.B. inoculation having been introduced at a much later

TABLE II.—*Agglutination Results with* B. Typhosus *arranged according to the Agglutinating Properties of the Sera for* B. Paratyphosus A *and* B *(to Demonstrate Effect of Simple* B. Typhosus *and Mixed T.A.B. Vaccines).*

(*a*) No. of sera. (*b*) Average typhoid agglutinin units.

Months.*	Ty. only.		Ty. and A.		Ty. and B.		Ty., A, and B.	
	(*a*)	(*b*)	(*a*)	(*b*)	(*a*)	(*b*)	(*a*)	(*b*)
1	1	21	2	48	—	—	7	75
2	1	20	3	179	—	—	4	78
3	5	7	1	26	—	—	3	146
4	6	59	1	8	2	281	2	111
5	11	25	3	46	—	—	8	94
6	7	55	2	41	—	—	1	69
7	7	34	—	—	—	—	3	16
8	3	14	1	10	—	—	2	34
9	6	42	3	12	—	—	2	34
10	5	79	1	34	—	—	6	64
11	6	20	—	—	1	26	3	24
12	2	79	—	—	2	41	—	—

* Since last inoculation.

period than simple Ty. inoculation), because in this event (as has been shown before) cases who have received two doses of Ty. vaccine would have a higher unit content than those who had received only one dose, apart altogether from the question of A and B constituents.

In drawing up Table II. due attention has been paid to this point and only the sera of men who have received more than one inoculation have been included, so that the excess of Ty. agglutinins in the T.A.B. cases cannot be ascribed to the difference in effect which would be produced by two doses of Ty. vaccine over that produced by one dose only. The elimination from the table of all cases who had received only a single dose of vaccine reduces the total number of cases to a considerable extent. Further accuracy might be obtained if cases who had received two doses of vaccine and three doses of vaccine respectively were compared, but the relatively small number of cases would not allow of any further subdivision.

Now, granting that the Ty. element of the T.A.B. vaccine is not responsible for this increase in Ty. agglutinins, it must be due to the A or B element, or both equally, or to their combined presence. Although the number of cases have become smaller when so many factors have to be taken into consideration, the figures would seem to point to the fact that the combined presence of the A and B elements is responsible for the rise in the Ty. agglutinin titre. From the figures available it would not be possible to say whether the A and B elements taken individually can claim priority in causing this effect.

Agglutination Results with B. Paratyphosus A *and* B.

The results obtained are set out in Tables III. and IV. On the whole, these results are disappointing, as a large number of sera failed to agglutinate either A or B. This

TABLES III. and IV.—*Agglutination Results with B. Paratyphosus A and B.*

III.—*B. Paratyphosus A.* IV.—*B. Paratyphosus B.*

Months since last inoculation.	Number of sera.	Agglutinin units.								Agglutinin units.				
		0	3–15	15–35	35–65	65–150	150–350	350–650	650–1250	0	3–15	15–35	35–65	65–150
1–3 ...	34	29·3	8·8	11·7	23·5	17·6	5·8	—	2·9	5·9	29·4	8·8	8·8	—
4–6 ...	54	64·8	18·5	12·9	1·8	1·8	—	—	—	72·2	14·8	5·5	5·5	1·8
7–9 ...	35	5·7	20·0	5·7	2·8	2·8	—	2·8	—	77·1	17·1	—	5·7	—
10–12 ..	32	56·2	21·8	18·7	3·1	—	—	—	—	56·2	21·8	9·3	12·5	—
13–15...	18	88·8	11·2	—	—	—	—	—	—	100	—	—	—	—
16–18...	9	88·8		11·2	—	—	—	—	—	77·7	11·1	11·1	—	—
19–23 ..	12	91·6	—	—	8·4	—	—	—	—	100	—	—	—	—
24 & over	33	87·8	6·0	3·0	—	3·0	—	—	—	87·8	6·0	3·0	3·0	—
—	227	66·0	13·6	9·2	5·2	3·9	0·8	0·4	0·4	74·0	15·0	4·8	5·7	0·4

may be partly explained by the absence of the A and B elements in the vaccines in the case of men who had received inoculation more than 12 months before the examination of the sera was made; but one would expect to get more sera agglutinating A and B among those men who had been comparatively recently inoculated, say within 12 months, when inoculation with mixed T.A.B. vaccine had become more general.

Two other factors which might produce this poor response may also be taken into consideration: 1. The dose of A and B in mixed T.A.B. vaccine is only half the strength of the Ty. 2. The agglutinins resulting from an injection of T.A.B. vaccine would greatly favour the Ty. agglutinins in the case of a man who had already been inoculated with simple Ty. vaccine; that is to say, the A and B elements in the vaccine might be only the first dose of these particular micro-organisms, and consequently their agglutinins would fade away more quickly from the serum, whereas the Ty. element in the vaccine might represent the third or fourth dose of this microbe; consequently the agglutinins would persist for a longer time in the serum.

This extraordinary discrepancy between Ty. and A and B agglutinins was well seen in a chart where the percentage of negative sera obtained with Ty., A, and B are set out. So far as these cases are concerned one would be inclined to say that A and B agglutinins begin to disappear rapidly three months after inoculation; after twelve months they are practically gone, except in the case of A, where they persist longer than B agglutinins. As even in Ty.-inoculated subjects one must be prepared for a certain number of non-agglutinating sera, what might be regarded as the normal negatives, so also in the case of A and B inoculation a certain number of sera will be met with which will not agglutinate A and B.

In the absence of any definite information as to the type of vaccine the men of this series had received, it might be well to examine what might be termed the positive side, and compare those sera which agglutinated each micro-organism, eliminating from the figures those sera which were negative.

When entering into a criticism upon the relative properties of sera which agglutinate Ty., A, and B, it must be remembered that although the cultures used in this investigation were Oxford Standard Cultures, these standards only hold good for repeated examinations with one specific micro-organism. The cultures were not standardised as against each other. A standard unit of Ty. agglutinin does not necessarily correspond with a standard unit of A or B agglutinin. The sera which form the subject of this paper were tested against standard cultures which had the average factors of 5·7 for Ty., 3·6 for A, and 3·0 for B. It should be remembered, therefore, that the course of the curves rather than their relative heights are compared.

A chart has been drawn up so as to compare the sera which agglutinated Ty., A, and B. All negative sera have been eliminated, and the percentages calculated upon the number of sera which agglutinated the three micro-organisms.

The following observations may be made:—1. During the 1–3 months period after inoculation the A agglutinins approximate much more closely to the Ty. agglutinins than do the B. The agglutinins for B are much weaker—viz., more weak titres (3–15) and less high ones, the highest number of units reached being 35–65. 2 During the 4–6 months period the Ty. curve is comparatively stationary, whereas those for A and B are both decidedly weaker, the curves being steeper. 3. During the 7–9 months all three curves show weakness, but the curve for A agglutinins has still some similarity to Ty. agglutinins as regards high titres, but a larger percentage of cases gave only 3–15 units. 4 During the 10–12 months period the Ty. agglutinins are holding their ground, whereas A and B are both falling away together, the difference being possibly slightly in favour of A agglutinins.

An examination of the curves would seem to indicate that the A agglutinins behave like those for Ty. The B response is weak all the time. In T.A.B. vaccine the dose of A is only half the strength of the Ty., and it would appear justifiable to conclude that if the same dose of A vaccine were given as is given for Ty. the resulting agglutinins would be the same and the immunity as estimated by agglutinins would be equally good.

But in the case of B agglutinins the response to vaccine, as at present used, is comparatively so weak that a considerably stronger vaccine would be necessary to produce an equally strong immunity. Consequently, one would be tempted to recommend a change of dosage in prophylactic T.A.B. inoculation—namely, to equalise the strength of A element with that of Ty. and to give twice the corresponding strength of B vaccine. The ratio then would be Ty.^{1}, A^1, B^2. This might suitably be given in three doses.

(1) ... Ty. 250 millions ... A 250 millions ... B 500 millions.
(2) ... Ty. 500 ,, ... A 500 ,, ... B 1000 ,,
(3) ... Ty. 1000 ,, ... A 1000 ,, ... B 2000 ,,

Dublin.

Medical Societies.

MEDICAL SOCIETY OF LONDON.

Morbid Anatomy and Histology of Rheumatoid Arthritis.

A MEETING of this society was held on Oct. 28th, Major A. F. VOELCKER, the President, being in the chair, when Dr. T. S. P. STRANGEWAYS read a paper on the Morbid Anatomy and Histology of Rheumatoid Arthritis, and exhibited numerous pictures on the epidiascope showing the inflammatory and fibrotic conditions around the joints.

Dr. STRANGEWAYS gave the following summary of a report with a detailed description of the changes found in joints of patients suffering from that form of chronic arthritis at present recognised clinically as rheumatoid arthritis. Most of the specimens which furnished the material for the report were obtained during post-mortem examination of over 2000 joints of patients suffering from one or other of the following forms of chronic arthritis—namely, rheumatoid arthritis, osteo-arthritis, chronic gout, or Charcot's disease. He was indebted to a large number of men in practice in Great Britain and Ireland for the clinical and pathological material from which this report was prepared, and wished to express his gratitude to them for allowing him to conduct the post-mortems necessary. The anatomical and microscopical specimens prepared to demonstrate the various changes in such joints were preserved at the Cambridge Research Hospital, where they were accessible for inspection to any interested. The report referred to was submitted to the Medical Research Committee, who made a generous grant in aid of the work from the funds at their disposal. The summary has been written in the form of categorical statements, which for the sake of reference have been numbered.

Changes found in Rheumatoid Arthritis.

1. The term rheumatoid arthritis, as at present used, includes several forms of arthritis which are clearly due to different causes, although clinically they may show several points of similarity.

2. The crippling and deformity associated with rheumatoid arthritis or what is taken as such is largely of muscular origin which may be (*a*) of the nature of an involuntary contraction brought about by pain referred to the joint of the crippled limb, (*b*) due to an involuntary muscular spasm caused by pain on movement of the damaged joint, (*c*) due to actual atrophy and shortening of some of the muscles connected with the diseased joint. This atrophy is usually associated with disuse and long-continued muscular spasm.

3. In other cases the deformity is due to changes in the joint itself such as: (*a*) distension of the capsule by an excess of synovial fluid, (*b*) dislocation of the bones of the articulation, (*c*) changes in the shape of the articular surfaces owing to formation of new bone or to erosion of the original.

4. Some cases in which clinically the joints appear to be damaged show very little morbid change on post-mortem examination, although the symptoms of arthritis with crippling deformity have been present for many years. Some of these cases seem to be of nervous origin, associated with pain which is referred to the joint.

5. Cases are observed in which the capsule of the joint has been distended for a long period by an excess of synovial fluid, accompanied by more or less deformity, but in which on post-mortem examination no marked changes are discovered. In some examples of this type the fluid ultimately diminishes. Fibrotic changes may then be present in the capsule and the articular cartilages may have undergone fibrillation or atrophy.

6. A considerable proportion of the joints show distinct inflammatory changes in the synovial membrane, in the capsule or in the bones of the articulation; in any case the articular cartilage may be involved. These inflammatory lesions may be present in one or all of the above-mentioned structures, and be either acute, subacute, or chronic.

7. In a few cases the processes are obviously of infective origin and are associated with marked inflammatory changes in the synovial membrane and the formation of thick fleshy villi and vascular adhesions. Microscopically, the inflamed tissues show large collections of inflammatory cells and new capillaries. Erosion of the articular cartilage and bones may also be present.

Nature of Inflammatory Process.

8. If changes are found in a joint affected with what is termed rheumatoid arthritis they are usually of an inflammatory nature, but their severity and extent vary considerably in different cases and in different joints from the same case. The changes may be present in a part only of the articulation.

9. The inflammatory process may originate either in the synovial membrane, in the capsule, or in the medulla of the superficial cancellous spaces of the epiphysis, or in all three of these structures.

10. The inflammatory process, if severe, is associated with proliferation of the connective tissue cells, the development of new blood-vessels, the accumulation of leucocytes, and sometimes with the extravasation of red blood corpuscles and the presence of fibrin. The inflammatory tissue may originate in the synovial membrane or in the capsule and invade the articular cartilage and bone, or lead to the formation of inflammatory adhesions in the joint cavity. This inflammatory tissue tends in the course of time to become organised and converted into fibrous tissue and may result in fibrous ankylosis either between the adjacent surfaces of the capsule or between the cartilage, or even between the bones of the articulation if the original cartilage has been destroyed.

11. In some cases the arthritis is of a subacute type from the onset, and the inflammatory changes, although often progressive, are not so marked. In this type the changes may originate in the synovial membrane, the capsule, or the superficial marrow spaces of the epiphysis, from either of which they may spread to the articular cartilage; the process leads to the formation of fibrosing tissue in the affected areas, and this when present in the capsule causes the latter to contract. The movements of the limb are in consequence restricted and the articular cavity decreased in size. Fibrous adhesions also develop in these joints, and in some cases fibrous, cartilaginous, or bony ankylosis.

12. The changes in the superficial marrow spaces lead to resorption or erosion of the osseous trabeculæ, which may be associated with the invasion and replacement of the articular cartilage by the inflammatory tissue.

13. Other joints show a slowly progressive inflammatory fibrosis of the capsule, often associated with degenerative changes in the cartilage and proliferative changes in some of the superficial marrow spaces. In these joints areas of cartilage may be invaded, either superficially from the capsule or from beneath by proliferating connective tissue cells and new vessels of the superficial marrow spaces.

14. The inflammatory reaction of the marrow of the superficial cancellous spaces of the epiphysis may be of an acute, subacute, or chronic type. In either type the connective tissue cells of the marrow proliferate and new blood-vessels form. In the acute cases the new connective tissue cells are of stellate form. In the chronic cases the connective tissue cells appear more fibroblastic, especially such as be near the edges of the bone trabeculæ, but in all cases these cells show a tendency to store up fat and become marrow cells as the inflammatory process subsides. In those cases where the superficial osseous trabeculæ are eroded and the zone of calcified cartilage invaded the connective tissue cells and vessels form a definitely organised fibrotic tissue, the cells of which do not show the same tendency to produce fat.

15. In no instance has it been possible to demonstrate periarticular changes of an inflammatory nature around the affected joints, and it is doubtful if there is such a condition as periarticular rheumatoid arthritis.

Changes in Cartilage.

16. The changes in the cartilage vary considerably in different joints from the same case, and even in the same joint.

17. The articular cartilage may show signs of atrophy, accompanied by modifications in the staining reaction of the matrix.

18. The articular cartilage may show proliferation of its cells, which results in the formation of cell groups usually surrounded by an unstained zone.

19. The cartilage may become definitely fibrillated, and with this change there is usually evidence of proliferation and the formation of groups of cartilage cells. The fibrillation begins, as a rule, on the free surface and may extend to the deepest parts of the articular cartilage.

20. The hyaline cartilage may become converted into a modified fibro-cartilage, but in such specimens there is usually evidence of some inflammatory process in the neighbourhood of the altered structure. This process seems to be due to proliferation of the cartilage cells, but in some specimens the connective tissue cells of the inflammatory tissue also appear to take part in the formation of fibro-cartilage.

21. Areas of the articular cartilage may become necrotic; this necrosis may be found where inflammatory reaction has taken place. The edges of the necrotic mass often show a beautiful replacement fibrosis, which may eventually lead to the complete removal of the necrotic tissue.

22. In some joints portions, or even the whole layer, of the articular cartilage may be infiltrated and replaced by a more

or less vascular inflammatory tissue, owing to the cartilage having been invaded by new blood-vessels and connective tissue cells. In certain specimens the cartilage cells proliferate and appear to take part in the formation of the new tissue which has replaced the cartilage. This replacement of cartilage may begin either on the free surface from an inflammatory process spreading from the synovial membrane or capsule, or in the deeper parts of the cartilage by the extension of an inflammatory process from the subadjacent marrow spaces.

Changes in Bone.

23. The articular bone may show atrophy, rarefaction, resorption, or erosion.

24. The superficial osseous trabeculæ underlying those portions of the articular cartilage in which advanced atrophy, fibrillation, or complete wearing away has taken place may show increase in size and density owing to formation of new bone, brought about by continued use of the limb notwithstanding the joint changes. The amount of the new bone formed appears to depend upon the reaction of the tissues to pressure, and this increases in proportion to the weight and friction on the affected area. In those instances where the cartilage is absent and the superficial bone exposed this process leads to polishing of the superficial surface of the sclerosed bone. Associated with this increased density of the osseous trabeculæ minute fractures are often seen; these are probably of traumatic origin. In the neighbourhood of these fractures there is generally callus formation, with a combined process of resorption and repair around the injured area. These changes are characteristic of osteo-arthritis, but are not common in rheumatoid arthritis.

25. In those instances in which the inflammatory changes are confined to the synovial membrane active changes are not observed in the bone marrow or osseous trabeculæ, but there is often atrophy of the osseous trabeculæ in the neighbourhood of the affected joint; this appears to be due to disuse.

26. When an inflammatory process attacks the articular cartilage or bone of a joint inflammatory changes do not, except in rare instances, involve the whole of the epiphysis, but are usually strictly confined to the quite superficial cancellous spaces and superficial osseous trabeculæ. As a rule these changes are not found over the whole of the articular surface, but only in isolated areas; they vary greatly in intensity and extent in different joints or in different parts of the same joint. The process may be a chronic, slowly progressive resorption of bone, accompanied by new formation of bone in the neighbourhood. In such areas very few or no multinucleated osteoclasts are observed. When the process is more active proliferative changes are found in the bone marrow, with congested blood-vessels, osteoclasts, and inflammatory cells. This process often leads to erosion of the articular cartilage and the underlying bone; with very rare exceptions the formation of new bone can be seen taking place in the affected area. In some cases the resorption of bone is more rapid than the new formation, in others formation of new bone is in excess.

Development of New Bone.

27. The development of new bone in a damaged joint may take place (*a*) in the articular cartilage, (*b*) in altered articular cartilage, (*c*) in the zone of calcified cartilage, (*d*) on the edge of pre-existing bone trabeculæ, (*e*) in inflammatory connective tissue in the cancellous spaces, (*f*) in fibrous adhesions.

28. The development of new bone in hyaline cartilage may be due to changes in the cartilage cells; these changes are usually preceded by vascularisation of the affected area and by a deposition of calcium salts in the surrounding matrix. This is followed by proliferative changes in the cartilage cells and the gradual development of new bone from the modified cartilage cells.

29. The development of new bone in altered hyaline cartilage—for example, fibro-cartilage—may occur through changes similar to those described in the hyaline.

30. The development of new bone is sometimes seen in areas of vascular inflammatory tissue which has invaded and replaced a portion of the articular cartilage. The new bone in this case may either be formed by cartilage cells, as above described, or from the connective tissue cells of the inflammatory tissue.

31. The development of new bone in the zone of calcified cartilage may be due to changes similar to those described in the hyaline.

32. In rheumatoid arthritis the development of new bone on the edges of pre-existing bone trabeculæ is usually accompanied by proliferative changes in the marrow, which lead to resorption of bone in the neighbourhood of the new formation. The two processes occur simultaneously, and appear to depend upon some irritant causing increased blood-supply, which brings about resorption, and to pressure on the affected area from use of the limb, which causes the development of new bone.

33. Where new bone develops in inflammatory tissue which has replaced the marrow and osseous trabeculæ it appears to be formed from connective tissue cells in this inflammatory tissue.

34. New bone in fibrous adhesions appears to be formed from the connective tissue cells of the fibrous tissue.

35. In all the above instances the development of new bone is associated with the formation of cancellous spaces and marrow tissue. The new marrow usually consists of adipose tissue. The formation of the cancellous spaces appears to be due to the development of new blood-vessels, to changes in the vascular supply, and to the development of stellate connective-tissue cells in which fat accumulates.

Limitation of Movement.

36. Limitation of movement in a joint may be due to (*a*) muscular spasm, (*b*) shortening and atrophy of muscles and tendons, (*c*) fibrotic changes in the capsule leading to contraction, (*d*) alteration in shape of the articular surfaces, (*e*) ankylosis, which may be fibrous, cartilaginous, or osseous.

37. Where the limitation of movement in a joint is due to muscular spasm it can be overcome by deep anæsthesia, but it returns when the effect of the anæsthetic has passed off.

38. The passive movement of a joint in which shortening and contraction of the muscles and tendons is suspected should not be lightly undertaken, as it is often associated with fatty changes in all the tissues of the joint, and fracture of any or all the tissues round the joint may take place.

39. Fibrotic changes in the capsule associated with contraction may be so extreme that the joint cavity is completely obliterated and the joint surfaces lie in close contact with the fibrous capsule, moulded tightly around the articulation.

40. Fibrous ankylosis is due to adhesions formed by the organisation of inflammatory tissue, which may originate either in the synovial membrane, the capsule, or in the superficial marrow spaces. These adhesions may partly or completely occlude the joint cavity. They may consist of long processes of more or less vascular fibrous tissue, which thus allow limited movement to take place in the joint, or of dense contracted fibrous tissue which firmly unites the articular spaces of the two bones (fibrous ankylosis).

41. The articular cartilage may become ankylosed by the matrix of the two layers of the hyaline cartilage becoming fused into one continuous layer, or the two layers may unite and be transformed into a modified fibro-cartilage. The ankylosed cartilage may become necrotic, and is often invaded and replaced by an inflammatory fibrous tissue, or new bone may develop in the ankylosed cartilage and thus bring about osseous ankylosis.

42. Osseous ankylosis takes place by the development of new bone either in ankylosed cartilage or in the fibrous tissue which has already produced fibrous ankylosis.

43. Ankylosis may occur between the two zones of calcified cartilage, but this form of fusion shows a tendency to become replaced by one of true bone.

Villous Outgrowths.

44. Villous outgrowths are found in some joints. These may be due to (*a*) overgrowth of normal villi, (*b*) inflammatory changes in the synovial membranes or in the capsule.

45. Villous outgrowths in a joint may consist of (*a*) vascular fibrous tissues, (*b*) dense fibrous tissue, (*c*) fibrous tissue enclosing groups of fat cells; (*d*) inflammatory tissue with dilated capillaries and groups of inflammatory cells, (*e*) degenerated or necrotic tissues, (*f*) connective tissue showing vessels deeply congested owing to obstructed circulation.

46. Villous outgrowths may become detached by rupture of the fine pedicles and so form a loose body in the joint cavity. The detachment may be preceded by necrosis.

47. Microscopic villi formed of cartilage are occasionally found on the surface of altered articular cartilage. These may be formed of hyaline or fibro-cartilage.

48. No constant changes are found after death in the organs or tissues of patients who have suffered from rheumatoid arthritis.

Discussion.

Dr. A. P. BEDDARD, in discussing the treatment of the condition, said that all joint affections, with the exception of gout, were due to infection. In order to treat the condition we must first find out where the infection came from and then investigate its bacteriology. In his opinion, in about 90 per cent. of the cases the infection came from the teeth and gums. It was impossible to say what the state was of the deep tissues of the mouth after a superficial examination; the use of X rays was absolutely essential. The attitude of dentists was fundamental, for they usually denied that the gums were infected unless there was running

pus. We must have common ground between the medical and dental points of view, and there was an enormous field for the education of the two professions in this connexion. Of the other 10 per cent., the infection in a few possibly came from infected tonsils and adenoids. A few also were due to infection of the mucous membrane lining the female genital organs after pregnancy. Curetting an infected uterus was of no use and might lead to the dissemination through the body of a large dose of bacteria. He had seen an extensive outbreak of joint trouble after curetting. It might be needful to remove all the female genital organs if such an operation should prove absolutely necessary. Infection of the alimentary tract was rarely a primary state of things. There was usually a previous *Streptococcus longus* infection of the teeth and gums, or tonsils and adenoids. After the primary cause was removed the question arose as to how to deal with the secondary manifestations. As far as the alimentary tract was concerned, where there were no signs suggesting that the mucous membrane of the colon was infected (such as attacks of diarrhœa) this was not likely to be the cause of the chronic arthritis. Dieting and washing out the colon were not of much use. With regard to partial or complete colectomy, he said that however complete the operation was the infection was not cured, and the operation was an extremely dangerous one. The removal of colons in highly infected people led to formation of adhesions in about six months. Wherever there was an infected tube which could not be cured it was first necessary, by the use of X rays, to see if there was any mechanical difficulty. In this case, and if an operation was to be performed, it was essential to produce less mechanical difficulty than was already present—in other words, the less done the better. The obvious treatment for the joints was vaccination, in order to stir up the body to the point of combating the infection. Of the usual bacteria present, about 75 per cent. were *Streptococcus longus*, and these, together with the pneumococcus and gonococcus, accounted for about 99 per cent. All three organisms might be found. In order to find out which was the offending organism, it was necessary to make vaccines of each and see which, on injection, would produce a good reaction—i.e., pain in the joints. He had known a lady from whom many strains of streptococci were isolated, but in whom only those from the teeth caused joint pain. Vaccine treatment was a question of a year or years, and should be continued till no pain could be produced in any joints on injection. This only referred to inflammatory and not mechanical effects. Ionisation, baths, &c., were only useful to relieve pain. It was "up to" the medical profession to standardise the treatment at health resorts. Massage was useful in keeping up movements, but could do little good with very stiff joints. The real treatment was preventive. With regard to the surgical treatment of infected joints, we must remember that the lower limbs must carry the weight of the body. Forcible movement of still infected joints was a great mistake. To get a permanently mobile useful joint was a matter of years, and with hospital patients (who probably would not persist with treatment) it was better to give up all idea of freely movable joints and go in for fibrous ankylosis.

Dr. M. J. ROWLANDS said that he had been enabled to carry out an investigation of rheumatoid arthritis among soldiers at Netley. He did not agree that such a large percentage were due to *Streptococcus longus*. Infection was generally due to *B. coli*. The gonococcus was present in a large number of cases. He was convinced that the disease was a toxic disease—a trophic neurosis—and until we could find out where the infection attacked the nerve we could never promote cure. He was much opposed to spa treatment and had never known a case to be cured by such. Hyperæsthetic areas around acute joints were very noticeable and the pin-prick or pulling of hairs could be used to show if the joint was or was not in an acute stage. A large number of paratyphoid patients returned from Salonika had developed rheumatoid arthritis.

Dr. F. DE HAVILLAND HALL said that patients had expressed relief after taking sulphur and guaiacum. Many were anæmic, and for these iron and arsenic, with or without strychnine, were needed. X ray examination of the mouth and the elimination of *B. coli* infection were most important.

Mr. V. WARREN LOW, Dr. G. DRUMMOND ROBINSON, and Dr. F. PARKES WEBER also spoke.

Reviews and Notices of Books.

Prothèse et Chirurgie: Cranio-maxillo-faciale. By J. LEBEDINSKY and M. VIRENQUE. With 154 plates, comprising 421 illustrations. Paris: Baillière et Fils. 1918. Pp. 398. £1 1*s*.

THIS volume embodies the clinical experience and teaching deduced from the treatment and plastic repair of wounds involving the jaws, face, and cranial vault at the Military Hospital of Le Mans. It approaches the dimensions of a standard work on this comparatively new branch of surgery. The authors have made a complete survey of the field, and their results show once again the great value of the prosthetist and surgeon working in mutual alliance. The compilation is the work of masters of their craft, for we must bear in mind that the injuries described were seldom encountered before the war, and the literature dealing with them was meagre and of slight clinical value. A salient feature in their scheme of treatment is the "osteo-periosteal graft." It may be described as the theme of the work. Employing the technique elaborated by Delagenière, the authors use it for the repair of all skeletal losses. The relative value of this type of graft, in contra-distinction to grafts of full thickness of bone or cartilage, is discussed at great length, the authors taking as their standpoint the theory that the periosteum preserves its vitality and acts as an osteogenetic focus. In support of this assertion they speak of a thin, viscid, slightly yellow secretion which is occasionally observed escaping from the wound after the insertion of these grafts. This they assume to be a true periosteal secretion. They also adduce as further evidence the fact that, in spite of the occasional exfoliation of the compact tissue of the graft, bony union has yet been obtained, although somewhat delayed. The microscopical evidences of the pathological processes occurring in the grafted area, relative to the absorption and deposition of new compact bone, are also discussed. It is asserted that the additional osteogenetic surface given by the periosteal layer is the main factor in retaining continuity of the graft, particularly in those cases presenting considerable loss of bone. Our experience of these grafts, although limited to their use in the treatment of pseudarthrosis of the mandible, with but slight loss of bone, supports the authors' high opinion of the osteo-periosteal graft. Their own results on the mandible are sufficiently encouraging. Out of 15 cases of pseudarthrosis treated by this method, some with very considerable loss of bone, 9 have been absolutely successful, 2 showed slight mobility only at the end of five months, 1 failed owing to the refusal of the patient to submit to immobilisation, while 3 are of recent date and hold out every prospect of a complete cure.

The results of the same method of grafting in the repair of cranial injuries, and for the restoration of facial contour, are equally satisfactory. In all cases the technique employed is the same. Laminæ of periosteum containing the subjacent layer of compact bone are lifted from the inner aspect of the shaft of the tibia by means of a chisel. The ends of the bony fragments to be grafted are cleaned and freshened. Retention pockets for the reception of the extremities of the graft are made by lifting the periosteum off the fragments by means of elevators. Into these retention pockets the extremities of the grafts are wedged. Depending on the area to be covered one or more grafts are used, overlapping each other in the cranial defects, whereas in the mandible they are placed in the following manner: one in relation to the freshened inner aspect of the fragments; the second external; while a third is laid in contact with the other two between the fragments. No foreign bodies whatever (with the occasional exception of catgut) are used to attach the grafts. The jaws are not immobilised until 12 hours after the operation in order to allow the patient to recover from the effects of the anæsthetic. Drainage is dependent on local conditions and the extent of the area grafted. Immobilisation is complete for two months; full union occurs in from three to five. The length of the waiting period before grafting should be attempted is fully discussed, and successful cases are cited where the grafts have been inserted in the mandible at periods of 3½ or 4 months after date of wound. These grafts are also used, in combination with those of cartilage or fat,

for the obtaining of contour in the plastic repair of facial deformity. Attempts have even been made to repair the walls of the frontal and maxillary sinuses.

Fractures of the maxillæ are classified at great length and praise is due for the way in which these difficult conditions have been handled. One cardinal factor is insisted upon in the treatment of all cases—i.e., the restoration of normal occlusion. Opinions differ with regard to the advisability of making the attempt where bony loss has been sustained, but it may well be that in the surgical treatment of these fractures lies the key to the authors' success. The following statistics are quoted: Out of a total of 280 cases under treatment only 3 with vicious union occurred; pseud-arthrosis resulted in 23 others, these latter cases, however, had suffered extensive loss of bone. The pages abound with descriptive illustrations, casts and splints being portrayed in great variety, the latter showing a truly Gallic ingenuity. The construction of splints is based on two main principles—the use of traction by rubber ligature for the correction of displacement, and the adaptation of guides and trolleys, to hold the jaws in normal occlusion after reduction. For the most part the methods advised are simple and there is an agreeable absence of cumbersome appliances, but we disagree with the authors in their contention that surgical methods for the correction of displacement are contra-indicated, as excellent results have been obtained from their use in selected cases.

With regard to the surgical aspect of these fractures, one innovation is made on what is now considered established practice. In cases with comminution the principle is laid down that only those spicules of bone lying in semi-attachment to the main fragments should be retained, the mobile spicules—i.e., with feeble periosteal attachment—being regarded as incipient foreign bodies and their removal indicated. If left, these form an obstacle to the formation of good callus. The repairing elements are regarded as the fixed adherent spicules, the flaps of periosteum, and the bony extremities, the intervening spicules giving rise to pseud-arthrosis by causing a condensing osteitis with resulting eburnation of the main fragments. Efficient drainage is insisted upon as a necessary principle of treatment during the evolution of callus. Trismus is dealt with at length and is regarded, with few exceptions, as due to a hypertonicity of the elevator muscles, occasioned by reflexes following injury in the masseteric region. The relative feebleness of the depressor muscles of the mandible predisposes to this condition, which is accentuated by the poor nutrition following the injury. All cases of muscular origin have been cured by the use of a dilator instrument invented by the authors, tension being obtained by powerful elastics, the average duration of treatment being two months. This dilator is also used as a basis for reduction preliminary to splinting.

Some disappointment may be felt in reading the section devoted to plastic work, inasmuch as it lacks the detail given to the treatment of the jaw injuries. Sliding flaps are preferred where possible, contour being subsequently obtained by the insertion of osteo-periosteal, cartilage, or fat grafts, either singly or combined. The lip plastics are performed over a prosthesis. Double epithelialised flaps are mentioned, but these are the exception, and some surprise may be felt that they are not more extensively used, especially when the facial sinuses are exposed. This objection particularly applies to the cases of rhinoplasty where the inner aspect of the flap is exposed in a septic cavity, with the risk of suppuration and contraction.

The chapter on rhinoplasty is deficient in that it deals only with injuries involving the middle third of the nose. In those cases where the nasal cavities have been exposed, owing to the destruction of the overlying tissues, the authors make use of glass tubes, taking their purchase from the frontal region and resting on the upper lip, for retaining the air passages patent and as a means of preventing the upward displacement of the alæ. We have already made our criticism of the single-flap method of repair which is used in these cases. No mention is made in the chapter on plastic surgery of skin-grafting, an invaluable adjunct in this work, particularly in the form of the "Esser" epithelial inlay, which method has no equal in the treatment of ectropion and as a means of creating sulci for the better retention of dentures. There is a valuable suggestion culled from Morestin's work with regard to the surgical treatment of facial paralysis. This consists in the suturing of little tongues from the masseter and temporal to the peri-buccal and the orbicularis palpebrarum muscles respectively. Much of interest also lies in the chapter devoted to salivary fistulæ. The theory advanced is that many of these fistulæ heal spontaneously by the suppression of glandular function. Ligature of Stenson's duct and alternatively avulsion of the secretory nerve to the parotid gland, the auriculo-temporal, are recommended as the best methods of treatment in intractable cases.

Many other matters of detail are usefully dwelt upon, including injuries of the nerves and blood-vessels, and the management of wounds involving the soft tissues of the face. We have here simply outlined the salient features of the volume. We strongly recommend the study of the book as a whole to those engaged in prosthesis and plastic surgery.

Précis de Dermatologie. By J. DARIER, Médecin de l'Hôpital St. Louis. Paris: Masson et Cie. 1918. Pp. 864. 18 francs.

THE name of Darier on the title-page of a text-book on dermatology guarantees to the reader both efficiency and originality, and the hospital of St. Louis has for many years attracted students from all parts of the world. No other hospital has produced such a number of distinguished dermatologists; at no other hospital has the dermatologist such unrivalled opportunities for study.

The first edition of this "Précis de Dermatologie" was exhausted some years ago, but the heavy duties entailed by the war prevented Dr. Darier from undertaking the publication of a new edition until now. Twenty years of further experience as a teacher has enabled him to compile a text-book admirably adapted to the needs of the advanced student and the practitioner. Practical points are dwelt upon; diagnosis is carefully and systematically described under every malady; theory and disputed problems are avoided. In his preface Dr. Darier claims that he has brought his new edition completely up to date, in line with the progress of science, yet without overburdening the text. Reference throughout proves the justice of this claim, and on turning to sections such as those dealing with anaphylaxis, cutaneous diphtheria and leukæmia, and syphilis we find examples of the precision, order, and compression for which French authors are justly famed. Treatment is indicated at the end of each section; details, with prescriptions, are to be found at the end of the volume. The British practitioner will note with interest the thoroughness and the length of the treatment of syphilis. At the outset Dr. Darier advises a course of 4 to 7 injections of novarsenobenzol, at weekly intervals, in doses of 0·30 g. to 0·90 g. After a pause of a few weeks mercurial injections are begun. Grey oil is preferred, and is administered in courses of six injections every two or three months for two years, and the result is better if this method is followed also during the third and fourth years. In strong subjects the mercury may be given at the same time as the arsenobenzol. The significance and limits of the Wassermann reaction are discussed.

In every malady described we find evidence of the extensive knowledge acquired only after long years of experience and persevering study devoted to a special subject. We recommend the work to the British medical profession.

A Text-book for Midwives. By J. S. FAIRBAIRN, B.M.Oxon. Second edition. London: Oxford Press Warehouse. 1918. Pp. 350. 20*s*.

THE author of this work has for many years been a teacher of midwives and closely associated with all movements for their higher training. The book in its new edition is much more than a mere text-book: it is a comprehensive exposition of the subject of midwifery adapted to the difficulties and the growing responsibilities of the present-day midwife. The introductory chapters on physiology are illuminating in the sense that they will really help the midwife to understand the phenomena which she has such abundant opportunity of observing. While all the special sections should be carefully studied, the section dealing with the duties of the midwife will be found specially useful, and we note the addition of a new chapter on antenatal care. A welcome feature of the book to the practising midwife will be the chapter summarising the rules of the Central Midwives Board, wherein she will recognise the work of a friend who enters into her difficulties with understanding,

The midwife who masters Dr. Fairbairn's book will not only make herself efficient in her craft but will become a useful handmaid to medicine.

LIBRARY TABLE.

The Megalithic Culture of Indonesia. By W. J. PERRY, B.A. London: Longmans, Green and Co. Manchester: At the University Press. 1918. Pp. 198. 12*s.* 6*d.* net.—*The Passing of the Great Race; or, the Racial Basis of European History.* By MADISON GRANT, Chairman of the New York Zoological Society. London: G. Bell and Sons. 1917. Pp. 245. 8*s.* 6*d.* net.—The study of ethnology and of comparative psychology has received an impetus from the "general post" occasioned by the state of almost universal warfare, which is not likely to diminish with the return of peace. The administration of law and order among peoples whose habits of thought and mode of life differ fundamentally from our own requires a sympathetic insight into motives only to be attained by careful study of the past and the present. In Mr. Perry's book, one of the ethnological series of publications issued by the University of Manchester, an inquiry is made into the effects produced by the stone-using immigrants upon the less-advanced inhabitants of Indonesia—a term here used to include not only the East Indian Archipelago, but also Assam, Burmah, the Malay Peninsula, the Philippine Islands, and Formosa. These immigrants are credited with the introduction of terraced irrigation, of metal-working, and of rice-growing, as well as the foundation of lines of chiefs and of a warrior class. The author's investigations are part of a wider inquiry to be extended to other regions of the earth embracing the whole development of civilisation.—Mr. Grant's book deals with the racial history of Europe and examines the physical and psychological characteristics of its races rather than the domains of nationality and language. Racial traits dating back to the time of tribal man anterior to civilisation are discussed in relation to their influence on the present-day inhabitants. His statements are often piquant and likely to provoke discussion. A typical sentence runs: "We Americans must realise that the altruistic ideals which have controlled our social development during the past century and the maudlin sentimentalism that has made America 'an asylum for the oppressed' are sweeping the nation towards a racial abyss."

The Passing On of Life: a Talk about Ourselves. By Viscountess FALMOUTH. London: George Routledge and Sons, Ltd. 1918. 2*d.*—This is a tract on the reproduction of the human species, and is intended to prepare the minds of juvenile readers for the absorption of requisite knowledge on this subject. It is founded on the axiom that "Right Thinking Leads to Right Doing." The contemplation of flowers and butterflies and birds leads up the staircase of life to man, and the passing on of human life, when controlled by moral standards, is regarded as the highest function of the body. The first edition of this useful pamphlet was reviewed in our columns on Jan. 6th, 1917.

The Lau Islands (Fiji) and their Fairy Tales and Folklore. By T. R. ST. JOHNSTON, F.R.G.S., F.Z.S. London: The Times Book Club. Pp. 145. 5*s.* net.—Mr. T. R. St. Johnston, whose entire familiarity with the island groups of the Pacific is shown in every line of his writings, prefaces his book with a note from "Somewhere in France," for he is serving at the moment as a temporary Major in the Royal Army Medical Corps. The Lau Islands lie about midway between Fiji and Tonga, some 200 miles from either group, and the author discusses their importance from three separate points of view: utilitarian, as a valuable asset to the copra industry of Fiji; political, because of their geographical and historical relations with Fiji; and scientific, in offering abundant material for a study in comparative ethnology. It is to illustrate the third point that his recapitulation of the fairy tales of the Lau Islands and their folklore is mainly directed, but reference is made to Mr. Basil Thomson's well-known book, "The Fijians," which contains a concrete study of the customs of the natives. Mr. St. Johnston has limited himself, therefore, to legendary folklore and to the doings of the people of the Lau Islands, "whom I know best." How well he knows them can be judged by such chapters as the second one on South Sea Magic, the fourth, entitled "The Duel 'tween God and Ghost," his summary of the legends of the Exploring Islands, and his account of the "Shark God" and the Father of Serpents.

New Inventions.

A NEW EYE SPUD.

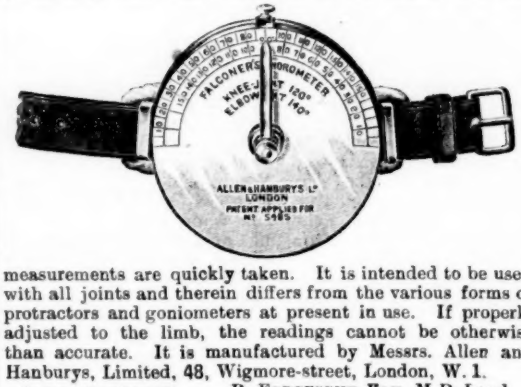
THOSE practitioners who receive many patients suffering by reason of the ingress of foreign bodies to the surface of the eye must have been struck with the inadequacy of the instruments in use for the removal of these foreign bodies, particularly of those which adhere to the surface of the cornea. There is but one instrument, the spud, a sort of maid-of-all-work, useful but lacking refinement and distinction. The spud of usual pattern is merely a narrow strip of metal thinned to a blunt edge, and since it is essentially a digging tool it is not good for the removal of the foreign body which is just stuck on to the surface of the cornea. The most dextrous use of the ordinary spud can scarcely avoid a corneal abrasion. For the removal of the ordinary superficial foreign body I have designed a spud (see Figure) calculated to "lift" the foreign body from the eye. On the usual metal handle is mounted a steel stem, this terminates in a small angled piece of steel. This end-piece is shaped like a plano-convex lens, it measures a couple of millimetres in diameter, is set at an angle of 45° to the line of the stem, and the surfaces are placed so that the plane looks towards the handle and the convexity away from it. The edge of the steel end-piece is ground as finely as the shape allows; it is so sharp that when pushed forwards on the hard surface of the finger-nail it will remove a fine shaving of horn. For the removal of a foreign body from the surface of the cornea the eye is anæsthetised in the usual way, the lids are held apart, and the globe is fixed with the finger-tips of one hand. Then the new spud is directed to the eye vertically to the corneal surface with the edge of the end-piece as close to the foreign body as possible, gentle pressure of the spud on the cornea will cause the convexity of the end-piece to depress the corneal epithelium below it, so that a gutter is formed beside the foreign body and the edge of the instrument lowered in relation to the foreign body. A forward movement of the instrument from this position will lift off the foreign body cleanly and without abrading the epithelium. This new spud is not a maid-of-all-work. It is not intended to be used for digging out foreign bodies. To use it for such a purpose is to ensure disappointment. It is a spud of the "first instance." It will lift off the new placed invader more neatly and expeditiously than any other form of spud.

The new instrument is made by Messrs. John Weiss and Son, 287, Oxford-street, London, W. 1.

Harley-street, W. N. BISHOP HARMAN, F.R.C.S.

AN "ARTHROMETER."

THE illustration depicts a new device for measuring the angles of movements of joints, which has been designed by Mr. Wilbraham Falconer, Superintendent of Mechanical Treatment in the Red Cross Clinic for the physical treatment of disabled officers. This "arthrometer" is simple in construction and easily adjusted to the limbs, and the measurements are quickly taken. It is intended to be used with all joints and therein differs from the various forms of protractors and goniometers at present in use. If properly adjusted to the limb, the readings cannot be otherwise than accurate. It is manufactured by Messrs. Allen and Hanburys, Limited, 48, Wigmore-street, London, W. 1.



Devonshire-place, W. R. FORTESCUE FOX, M.D. Lond.

THE LANCET.

LONDON: SATURDAY, NOVEMBER 9, 1918.

Phthisis in Factory and Workshop: The Ministry of Health Bill.

IN another column of this issue of THE LANCET we publish a striking article by Professor BENJAMIN MOORE on the conditions leading up to, or accompanying, the incidence of pulmonary phthisis in workshops and factories. The article is founded upon information which Professor MOORE has personally gathered, and in it he sets forth powerful arguments for the institution of an industrial health service. For the author has for some time been engaged in studying how far the rate of incidence of phthisis in different sections of the community varies with the strain of the conditions, with the hours of employment, and with the nature of the work. Observation during prolonged visits to workshops, statistical study of the operations of the National Health Insurance Act, and investigation of the returns of the Registrar-General, have been carried out and the results collated in the paper to illustrate the effects of urban types of employment in influencing the prevalence of phthisis.

We know that pulmonary phthisis actually kills more males than females, but Professor MOORE states—what many have not realised—that this greater death-rate among males applies only to the urban conditions of life, and is due to the modern conditions of factory and workshop life. The reverse holds good for the rural dwellers, in whom the death-rate among females remains higher than that of males in every age-group. In both town and country nearly twice as many girls as boys die of phthisis between the ages of 10 and 15. The important point is, that while until the twentieth year the mortality in both sexes from pulmonary phthisis is greater in rural districts than in urban districts, between the twentieth and thirtieth years the conditions in the towns become reversed. After the thirtieth year the disease preponderates greatly amongst urban males as compared with urban females; but no such disparity is observable between the death-rates of rural males and rural females, and in the towns the disparity is a recent occurrence not to be observed in the returns of 70 years ago. Professor MOORE'S statements are well supported by four charts selected to illustrate the contrasts in death-rate from pulmonary phthisis in accordance with occurrence in urban or rural conditions. The four charts are plotted to the same scale. The first compares rural areas with urban areas; the second shows the London area, where the curves well display the marked difference between the mortality of males and females; the third contrasts Lancashire and Westmorland; and the fourth Warwickshire and Dorset. It emerges from these charts as a general rule that in typical rural districts death-rates of males and females lie close together, whilst in urban districts the male death-rate is vastly the higher during the middle period of life. Professor MOORE'S reasons for the curves of the charts are so clearly set down that they require no analysis or simplification from us. We may add that he seems to us to be generally convincing, though the remarks on the printing trade are capable of misinterpretation. It is incorrect to say that machine managers are better organised than printers' assistants, although, as highly skilled men, they naturally earn more money per hour than their assistants. Secondly, Professor MOORE speaks of composing frames being set back to back, "so that the consumptive printer can spray the man working opposite to him and facing him at a distance of only two or three feet." But the workers at the frames cannot be less than five feet apart, while the upper cases are usually on a level with the man's eyes, standing erect, and the work is done with the head bent downwards.

We regard Professor MOORE'S paper, though dealing with only one disease and one section of the population, as very illustrative of the kind of work which has to be done in the near future, and for the proper doing of which a Ministry of Health is rightly demanded, so that widespread conditions of ill-health can be treated on some general plan by a central authority. It is being largely guessed that the recent changes at the Local Government Board have arisen from the desire to end a period of delay in the appearance of the Bill setting up this Ministry. The guess is as true as such general impressions frequently are, and the actual first reading of the Ministry of Health Bill will almost synchronise with the promotion of Mr. HAYES FISHER to a peerage and the appointment of Sir AUCKLAND GEDDES as President of the Local Government Board, retaining office also as Minister of National Service. The delay in the Bill has been unfortunate, although circumstances, we admit, have made the course of the Government very hard when so large a measure was in contemplation. The Bill to be introduced by Dr. ADDISON under the ten minutes' rule will set up two separate departments, one for England and Wales, and one for Scotland.

The Contributions to Red Cross.

BY a special effort recently made upon a day set aside for the purpose, and advertised throughout the country as "Our Day," a large sum of money, or what would once have seemed a large sum of money for such uses, was raised by the British Red Cross. Under the stimulus of such effort and advertisement many gave to the full extent of their power, and, so it is hoped, many contributions were won to this great cause which otherwise would have remained ungiven. It is well, however, that all should realise without distinc-

tion of class, and whether able to give little or much in comparison with their neighbours, that the claims of the Red Cross are not to be satisfied with a donation which may be substantial enough from the giver's point of view, or with a generosity which is only evoked by the appeal of a particular canvasser, or social occasion. The work of the Red Cross Society, in the performance of which thousands of men and women have toiled ceaselessly since the early days of August, 1914, is neither over nor nearly over.

The end is not even in sight, although the cessation of hostilities on all fronts may seem to be a matter of a few weeks, and although in the Eastern and Southern areas of war fighting has ceased with almost bewildering suddenness. This merely means that so far as Red Cross work is concerned the provision of material in certain directions will not have to be made with a view to future battles, and that the number of wounded men so far as those areas are concerned has become, or will be shortly, a matter of certainty and not of calculation or speculation. The cessation of hostilities has been achieved only in a limited portion of the field of war, whereas in others, on land and sea, bloody battles may yet precede the armistice, which we confidently expect will be the forerunner of final and lasting peace. No armistice, however, will bring to a conclusion the sufferings of the wounded which it finds lying on the field of battle or in the hospitals at home and abroad for which the Red Cross Society is responsible. The work remaining before the Society may diminish in volume by degrees, but the subscriptions which are necessary if its efficiency is to be maintained must be kept up to the end. The "clearing-up" processes will severely tax the energies and resources of the United Kingdom—and indeed of the whole world—and the organisation which we associate primarily with active warfare and its immediate results will be working at full speed when other energies are being discontinued. Wounded and sick men will remain dependent upon surgical and medical aid to restore them to comparative strength and well-being not for weeks or months but for years, and so far as the Red Cross Society may be responsible for their treatment, so long must its claims be a first call upon the generosity of all in the country.

The voluntary system, the custom of appealing to the liberality of individuals to supplement or to take the place of the efforts of the State where physical suffering or destitution is concerned, has given us the great hospitals and other charitable institutions of which the country has ever been justly proud, and it has given us the Red Cross Society. We need not dwell upon its previous achievements in our own recent war in South Africa or in succouring the wounded in the wars of foreign nations. At the beginning of the present terrific struggle it was soon realised that the military authorities had their hands too full of other matters to be able to undertake the care of the wounded without most strenuous assistance from everyone who might be able to help with hand, brain, or purse. That need for the coöperation of all has continued and will endure long after the last shot has been fired and the last wounded man has been borne to the dressing station, and that need we urge upon the public. When the immediate danger seems to have passed away for ever, let us not forget the seamen and soldiers who struck the last blows that repelled it.

Anoxæmia.

THE needs of the flying man and of the poison gassed soldier have perforce stimulated the study of the physics of the circulation. The airman, whose lungs are sound, goes up into regions where the oxygen in the air is insufficient for his needs. The gassed soldier has his respiratory area so diminished that he does not obtain enough oxygen from the ordinary atmosphere. Both suffer from anoxæmia and require an addition of oxygen to the air which they breathe, on a scale which could not conceivably be supplied by the wasteful methods in vogue before the war. No. 10 of the reports of the Chemical Warfare Medical Committee, just issued by the Medical Research Committee, deals with the administration of oxygen in irritant gas poisoning and gives an admirable summary of the indications and methods. In acute poisoning by lung-irritant gases the danger to life, so far as present knowledge goes, is mainly due to interference with the oxygen-supply to the tissues. It is very important to understand how the imperfect oxygenation is produced and how oxygen administration prevents it. The ordinary types of irritant gas produce, after an interval of some hours, a condition in which the alveolar tissues become swollen and liquid exudes into the alveoli, with the result that the absorption of oxygen occurs much less readily than under normal circumstances. By adding oxygen to the air breathed we can easily increase by several times the diffusion pressure which drives oxygen through the water-logged layer into the blood. The immediate improvement in colour, pulse-rate, and general condition testifies to the remedial effect of the inhalation. So far the matter is simple. But recent investigations at the Canadian Hospital at Taplow show that other factors have to be considered. It has been proved that deficient oxygenation of the blood may be due to imperfect ventilation of a part only of the lungs. HILL and TWORT, as well as ZUNTZ, came to the conclusion that perfectly healthy persons may exhibit some degree of anoxæmia during quiet breathing; and rapid and comparatively shallow breathing is frequently seen in the acute stages of irritant gas poisoning. Experience at Taplow has shown that the tendency to uneven distribution of air, with its consequent anoxæmia, is greatly increased in the recumbent position. There is, too, a large variation in the individual response of the respiratory centre to anoxæmia. In some Cheyne-Stokes breathing is produced with the greatest ease; in others consciousness is lost before the regulative machinery comes into action. The nervous regulation of breathing and the function of the bronchial muscular layer are factors as yet imponderable, for clinical evidence is still imperfect owing to the failure on the part of clinicians to recognise the early symptoms of anoxæmia or to realise its clinical significance. These deficiencies are now likely to be made up by the controlled administration of oxygen which the Haldane apparatus has made possible.

THE next session of the General Council of Medical Education and Registration will commence at 2 P.M. on Tuesday, Nov. 26th, Sir Donald MacAlister presiding.

Dr. H. H. Tooth, after four years of continued service with the Forces, two years of which have been spent abroad, has returned to his hospital duties and civilian practice.

Annotations.

"Ne quid nimis."

THE QUATERCENTENARY OF THE ROYAL COLLEGE OF PHYSICIANS OF LONDON.

In view of the urgent claims of the present no concerted action has been taken by the Fellows of the Royal College of Physicians of London to celebrate the 400 years which have elapsed since Thomas Linacre founded the College in the year 1518. But at the conclusion of the Harveian oration, which we have printed in full, the President, Dr. Norman Moore, after congratulating the orator, gave a brief and learned address befitting the occasion. He recalled the early circumstances of the College and the names of the first six Fellows, handing over to the College Library as a gift from himself a book which belonged to John Chambre, the first Fellow named in the Charter, and physician to Henry VII. and VIII. This done, he received at the hands of Major Michael Foster a Latin letter (the text of which, as well as the official answer of the College, we print elsewhere) from 16 Fellows now serving with the Armies in France, extolling their College and recording "the new regiment of fevers which has descended upon the earth, as though set free from Pandora's box." The letter ends, as is traditional in the College, with a Greek message: "Rejoice; we win," to which Dr. Moore made the felicitous reply: "We do rejoice; let right prevail." The messenger was rewarded by the President with a denarius of Caligula, whose tower still remains in part at Boulogne, and a drachma struck at the place where Hippocrates practised medicine. At the conclusion of this ceremony the President handed the Moxon medal of the College to Dr. F. W. Mott.

THE INCUBATION PERIOD OF INFLUENZA.

The incubation period of influenza is variously given in the text-books as from a few hours to four days, most frequently three to four days. The communication which we published last week by Major Michael Foster and Major H. Anstey Cookson on a small, localised epidemic is of interest in that the circumstances under which the first case of influenza was admitted into a surgical ward were such as to enable observations to be made upon the incubation period almost under the conditions of an exact experiment. Owing to the lack of beds in the medical wards a man suffering from an attack which clinically was of the nature of influenza was admitted into a surgical ward in which no case of medical illness had occurred for some days. Eight cases subsequently occurred in this ward, six of them in the beds immediately in the neighbourhood of the first patient and two on the opposite side of the ward. It seems possible that one of the latter cases may have been a fresh case introduced into the ward, though he may have been infected from the original patient. Although the nine cases showed somewhat different manifestations, there can be little doubt that they were all of an influenzal nature, and the diagnosis was established bacteriologically in two of them. The analysis of the onset of the cases with the aid of the diagram given in the paper seems to justify the conclusion arrived at by the authors—namely, that in all these cases the incubation period was about 48 hours, and that where the possibilities of accurate observation were greatest the incubation period approximated most closely to a 48-hour period. On the assumption that the cases were spread from bed to bed, and not all directly from the first patient, an assumption which seems reasonable to us, Major Foster and Major Cookson conclude that infection occurs only within a narrow radius of the patient. Their paper is a valuable piece of clinical research.

HEALTH AND EDUCATION.

The state of the Holborn streets in early October, owing to neglect following a strike, may have recalled to the older inhabitants of London the condition of many thoroughfares 40 or 50 years ago, but it is only when contemplation is carried back to the condition of things in the early part of last century that there is realised the wonderful progress made in sanitation and public health since that time. Great, however, as this progress has been, it might have been still greater if the public had been more alive to the need for practically applying the knowledge which science has placed at their disposal. Ignorance rather than callousness has retarded the wider application of sanitary knowledge as that knowledge accumulated; the ignorance remains, and if public apathy could be overcome it would be difficult to place a limit on the benefit to life and health which would thereby result. After the war it will be necessary that everything possible should be done to conserve the health of the people, but the best results can only be obtained if the people themselves intelligently coöperate in the efforts made towards this end, and for this it is necessary that they should understand the broad principles on which public health legislation is founded. On a small scale the experience of various local centres and institutions has shown the educative value of simple charts and diagrams illustrating the dangers to life and health which surround us and the means by which they may be avoided; while the exhibits intended for popular education shown in the entrance hall of the South Kensington Natural History Museum admirably illustrate how important scientific facts may be imparted to the people in simple and comprehensible guise. There is no doubt that a public health exhibition under Government ægis illustrating the various ways in which science has been brought to bear on sanitation and public health, and embracing, as did the Health Exhibition held at South Kensington in 1884, health, food, dress, housing, and education, would result in a greater stimulus to the study of health matters on the part of the public. A real advance in public health knowledge, and a consequent wider interest in the legislation necessary for carrying out promptly and effectively pressing reforms, are the urgent needs of the immediate future. Such an exhibition as we have in mind, if international in scope, would have effects of incalculable range; for the Allies, who have been fighting side by side in the cause of established civilisation, as well as neutral countries, would be brought into close touch by the common object of placing that civilisation on the surest basis of prosperity—a firmly consolidated international health. For these reasons the holding of another exhibition on the lines of that held at South Kensington in the early "eighties," and popularly known as the "Healtheries," deserves the earnest consideration of the Government.

AN UNUSUAL TYPE OF EMPYEMA.

SOMETHING approaching almost an epidemic of empyema associated with pneumonia occurred in the area dealt with by the base hospital at Camp Upton, New York, during last winter and spring. The clinical characters of these cases indicated that they were of an altogether different type from that with which we are accustomed, whilst operative procedure upon them was attended by an unusually severe mortality. Obviously such cases demanded careful clinical study, and an admirable account of this condition is given by Major Harlow Brooks and Major Russell L. Cecil in the *Archives of Internal Medicine* (September, 1918). Eighty cases form the basis of this study. In most instances it was discovered that the causative agent, not only of the empyema but also of the pneumonia associated with it, was the so-called *Streptococcus hæmolyticus*. In this series of cases cultures were made from the sputum and the pleural exudate. The following résumé of the results obtained is given:—

1. Pneumococcus in sputum and exudate ... 15 cases
2. Streptococcus ,, ,, ,, ,, ... 40 ,,
3. Mixed infections ... ... 10 ,,
4. Sterile empyemas ... ... 15 ,,

The pneumococcal empyemas differed in no respect from those seen in civil practice. The streptococcal empyemas made up 49 cases: 9 were instances of a streptococcal pleural infection associated with a pneumococcal pneumonia, 5 were infections by *Streptococcus viridans*, which differed in no marked manner from the *Streptococcus hæmolyticus* cases.

The patient usually complains of cough, fever, and pain in the side. The onset is usually gradual. Sputum is scanty and viscid, rarely rusty. Fever runs an irregular course. The physical signs before the onset of empyema are often indefinite. The empyema itself develops surprisingly early, a positive diagnosis being possible in, on an average, 5·4 days after admission to hospital. Often it develops before a conclusive diagnosis of pneumonia can be made; these empyemas are, in fact, imposed on, and do not merely succeed, the active stages of pneumonia. A most constant and suggestive clinical sign is profuse sweating and marked exhaustion. Abdominal rigidity is strikingly absent. Skin tenderness (not hyperæsthesia) over the involved area is frequent and has, in part, aided the selection of a point for aspiration. Physical signs have been disappointing; even X rays cannot be absolutely depended upon. Percussion is of most value. It is curious to note that pneumothorax developed in six instances, due, it is suggested, to the rupture of minute pulmonary abscesses. The fluid removed by the needle is light yellow and cloudy; later in the disease it becomes purulent.

Though all the cases of empyema were associated with pneumonia, in many the pneumonic process had been very slight, and the empyema far outweighed the pneumonia in clinical importance. Most of them seem to develop from a broncho-pneumonia. The mortality in this group of 49 streptococcal empyemas is high—61 per cent. As regards treatment, whilst in the usual run of cases early operation is beneficial, in these streptococcal cases similar measures are much less effective. Early operation, in fact, seems definitely contra-indicated: "Those patients operated on early have, almost without exception, died, whilst those in whom the operation has been postponed until the pus has become thick and gelatinous ..... recovered." It is evident from this general account that a very special type of pulmonary-pleural infection has been recognised. A very similar outbreak, occurring during the last quarter of 1917 in a camp at Zachary Taylor, Kentucky, was described in THE LANCET of June 8th, 1918, where attention was also called to the high incidence of empyema at Aldershot. We think it probable that the same thing is occurring elsewhere.

WAR DAMAGE AND THE STATE.

A DEPUTATION from the Committee on War Damage was received recently by Mr. G. L. Wardle, M.P., Parliamentary Secretary to the Board of Trade, its object being to obtain compensation from the State for those who have suffered through air raids or bombardments. A memorial on the same subject presented to the Prime Minister some time ago met with a favourable reception, and the more recent deputation lost no time in making it clear that in its opinion Mr. Lloyd George had accepted the principle of national responsibility, and that the fact that no tangible result had followed upon his observations amounted to something very like breach of faith on the part of the Government. We gather from a printed report of what occurred that members of the deputation received by Mr. Wardle laid their arguments before him with some vehemence, and were not a little disappointed at finding that he could give no pledge beyond promising to acquaint the Government with their views, and asking for particulars showing the extent of the liability which they wished the Government to undertake. With some reasonableness it was pointed out to Mr. Wardle that the acceptance of the principle of State compensation for damage to person or property arising from air raids or bombardment should not be affected by an exact preliminary calculation of the sum of money involved, The cogency of some of the arguments put forward by the deputation must also be admitted, even though full weight be allowed to the obvious reply that the State provided an insurance scheme of which owners of property at any rate might have availed themselves. The points insisted upon by the deputation were, to speak generally, that the districts most affected by air raid and bombardment have been precisely those which, owing to the danger of air raids, of bombardment, and possibly of actual invasion, have been the worst sufferers financially throughout the war. This would, of course, include towns on the south-east and east coasts, whose usual visitors have filled to overflowing seaside places in the west and consequently out of the danger zone. The deputation claimed to be able to say, as representing 842 municipal authorities and a population of 32,000,000, that the country at large was willing to pay for the sufferings of those whose accident of domicile had rendered them most liable to attack. We can well believe that this is the case, and we desire to give our own support to the views expressed by the deputation and to the demand which it has laid before the Government. No doubt a vast number of owners of property insured against the risks of damage from air raids or bombardment; but universal insurance, including that of the homes of the poor and of their contents, could not reasonably have been expected, and no doubt nothing approaching universal insurance took place. Something, in short, must be allowed for the human weakness of those who are imprudent, forgetful, procrastinating, or financially unprosperous, before we consider the provision of insurance by the Government as a complete answer to any claims made upon it. Moreover, there is the question of personal injuries, and looking at the matter from the point of view of the medical profession we cannot help bringing forward such an example as this. Our readers can picture a medical man having a practice in an East Coast town, summoned from his home and possible underground shelter to attend those injured by

bombs, being himself wounded by an explosion and being informed later that his house had been bombed in his absence, his wife or members of family being also hurt. If he were found, quite imprudently we admit, to have failed to insure to the fullest extent, or to have allowed his insurance to lapse, we should certainly feel impelled to support the view, which no doubt he would hold, that the State ought at least to help him to bear his loss. It will be recognised that the case we have put forward is not wholly imaginary, and because of it, and others, we sympathise in the abstract with the views put forward by the Committee on War Damage.

EPIDEMIC POLIOMYELITIS.

IN this country, happily, we have had so far no severe or widespread epidemics of acute poliomyelitis, such, for example, as that which swept over the State of New York two years ago, and which, in a population of about 10½ millions, attacked no fewer than 13,164 persons, most of them under 5 years of age, of whom 3331, or about 25 per cent., died; and among those who recovered a considerable proportion were left paralysed for life. In England the manifestations of the disease, while not uncommon, have hitherto been on a comparatively small scale. The total number of cases notified in 1917 was 357, distributed widely over the country in small groups of cases. The largest outbreaks in recent years occurred in Devon and Cornwall in 1911, and were carefully investigated on behalf of the Local Government Board by Dr. R. J. Reece.[1] Three localised outbreaks of epidemic poliomyelitis reported to the Board during 1917 were made the subject of special inquiry by medical inspectors. The three reports have now been issued together, along with a prefatory note by Dr. R. J. Reece, Assistant Medical Officer to the Board.[2] The first report is by Dr. A. S. MacNalty and deals with an outbreak, comprising 42 cases and 3 deaths, in the Esher and the Dittons urban district and in the adjoining Epsom rural district, 33 attacks being referred to the former and 9 to the latter. Twenty of the cases suffered from definite paralysis, in 12 of whom, when last seen, the paralysis still persisted. The spread of the disease generally was from person to person. Dr. MacNalty in his report gives a diagram representing graphically the spread of the infection and the grouping of the cases. Mild or so-called "abortive" cases occurred side by side with paralytic cases in the same households; such mild cases when unrecognised probably played a not inconsiderable part in diffusing the infection. The first attacks were reported in mid-July and the outbreak lasted until the end of August. The second report is by Dr. H. A. Macewen and relates to the occurrence of 11 cases of acute poliomyelitis in the borough of Cambridge and in its vicinity during the autumn of 1917. In this instance also the malady appears to have been spread by personal infection. The origin of this local outbreak was difficult to trace, and no connexion between it and a previous occurrence of the disease could be discovered. There was only 1 death among the 11 cases. The third report is by Dr. J. P. Chandler, and is concerned with an investigation of three cases of acute anterior poliomyelitis which occurred among the boys at Cheltenham College during the month of October, 1917. The precise source of the infection was not definitely determined, but it is thought very probable that it was brought to the college by a returning schoolboy at the conclusion of the summer vacation. The first of the cases had a fatal termination, but the other two recovered. There were ten notifications of poliomyelitis in Cheltenham town during 1916, but apparently no connexion existed between these cases and those at the college in 1917. The publication of these three reports serves, among other things, the useful purpose of reminding medical men that poliomyelitis is liable to occur, sporadically or otherwise, in any part of the country, and that practitioners should be on their guard against overlooking mild, abortive, or anomalous cases which, if not properly dealt with at once, might diffuse the infection in the locality and give rise to a serious epidemic. Epidemic poliomyelitis is, as our readers are aware, one of the saddest of diseases, since the tender-aged victims who survive the attack are often left permanently crippled or deformed.

[1] THE LANCET, 1912, i, 450.

[2] Reports to the Local Government Board on Public Health and Medical Subjects (New Series, No. 120). Further Reports and Papers on Epidemic Poliomyelitis. H.M. Stationery Office. Pp. 27. Price 1s. net.

ULSTER AND THE MEDICAL NEEDS OF THE ARMY.

AT the first meeting of the Ulster Medical Society for the session 1918–19, held in the Belfast Medical Institute, when Dr. W. Donnan, as retiring President, introduced his successor, Dr. J. Colville, Dr. F. Goodbody made a strong appeal for doctors for the front owing to the great necessity for them during the present Allied offensive. The medical profession in Ireland is being strongly pressed for fully qualified practitioners with the Army, and the Queen's University of Belfast has definitely decided to hold a special medical degree examination at the end of November, so that there shall be no delay until the usual degree examinations in March of next year. But they have made certain clear conditions:—

1. Every candidate before being admitted must sign a document that in the case of men they will go to the front, and in the case of women that they will place their services at the disposal of the War Office.

2. Those candidates who pass must provide evidence before their degrees are conferred that they have "signed on" with the War Office, otherwise their degrees will be forfeited.

"The possibility of getting young medical men in Ireland has been rendered doubtful," says our Belfast correspondent, "because there is no guarantee that if a young doctor throws up his practice and goes to the front he will not on his return find his patients in the hands of others who will not be very keen to give them back." Our correspondent proceeds:

"The bureaucratic authorities in charge of the petrol-supply are cutting down the amounts of spirit to doctors, with the natural result that, in addition to the amounts being smaller and often much poorer, the mileage of the cars is being diminished. The consultants and those attending the military in hospitals and camps are finding that it is impossible to get through work with the diminished supply of such frequently poor petrol; while older men—who would be willing to do the extra work of younger doctors, so as to let the latter off to the Navy and Army—realise they could not, with their present petrol-supply, do the work. What makes it specially aggravating is that every day civil officers are using petrol, and ambulances are seen running about with, at times, some vegetables or clothes (washed or soiled), as the case might be, from one military hospital to another. The whole train service is so greatly restricted that it is of little use to doctors. Owing to the inadequate supply of doctors the Dublin corporation has demanded the release of several medical men who have been deported and interned."

TUBERCULOSIS IN FRANCE.

The Return of the Tuberculous Interné.

CIVILIAN prisoners are being repatriated from Germany through Switzerland in increasing numbers. One of our French correspondents writes that something like 1000–1300 are arriving daily at Evian, and of these about 1 per cent. are found to be tuberculous, their condition being a product of the insufficient food, defective hygiene, and harsh circumstances of captivity. To ensure sufficient and immediate care for these unfortunates the Minister of the Interior has set up machinery at Evian for weeding out the tuberculous patients on their arrival, with a view to classification and treatment appropriate to each several case. A rapid separation into three categories is made: (1) the grave forms, which are sent to special hospitals; (2) the suspects, who are reserved for careful examination; (3) those found unaffected, who are then allowed to continue their journey. The hospital of suspects includes 180 beds, and to it is attached a hostel for healthy children, where sufficient isolation is obtained without complete separation from their possibly infective parents. At the end of 10 days' observation the patient then recognised as non-tuberculous is allowed to proceed. Those found to be tuberculous are classified as follows: (1) advanced or rapid lesions, needing rest in bed; (2) old cicatrised lesions with good general condition; (3) cases presenting some active symptoms, but whose lesions are slight and closed; (4) cases with open lesions and therefore infective, but with a prospect of cure.

The men are generally alone, the women more often accompanied by children whose health is not always the same as that of the mother, who does not wish to be separated from them. Four possibilities have to be considered: (*a*) infective mother with infective child; (*b*) infective mother with non-infective child; (*c*) non-infective mother with non-infective child; (*d*) non-infective mother with infective child; the last a very rare category. Among the non-infective children it is necessary to define: (1) the healthy; (2) the anæmic, debilitated, and the subjects of tuberculous glands; (3) those with tubercle of bone or joint. To meet the needs of these various classes there has been established a hospital of 56 beds in the neighbourhood for grave cases, men and women, their children being placed in a neighbouring hostel. Curable tuberculous cases are sent into other establishments, the men to sanitary stations in the interior, where they join the discharged soldiers. Several establishments for women are available according to the gravity of their case. At the village of Monnetier-Mornex a hospital of 125 beds has been set up at 800 metres above sea-level, a house of 30 beds for infective women, a hostel with 45 beds for healthy children, and a house of 30 beds for infective children. The Hospital of Ste. Eugénie, near Lyons, with 140 beds set up by the American Red Cross, also receives tuberculous women. Children with tubercle of bone or glands are sent to marine hospitals. Finally, the departmental committees of assistance for the military cases of tubercle are setting their vast organisation of regional sanatoriums at the disposal of the returned civilian.

Propaganda Work in France.

At the recent annual meeting of the National Association for the Prevention of Consumption, held in London, an informing address was given by Professor Selskar M. Gunn, Associate Director of the Commission for the Prevention of Tuberculosis in France. His main theme was the need for popular education in tuberculosis, as illustrated by the work of the Commission in France. "No matter how thorough is the medical care of the population," Professor Gunn said, "provision for the sick and a campaign against tuberculosis cannot secure complete results until each individual has been taught the fundamental facts of correct and healthy living and follows the teachings. In the last analysis the prevention and the eventual elimination of tuberculosis are a matter of sane living, of following the most simple physiological laws of health, good food, adequate rest, proper exercise, and fresh air. At present these facts are the property of a limited number of persons in the community. It is essential, if tuberculosis is to be conquered, that the scientific knowledge of the few be given to all. Professor Gunn then described the adaptation of some of the plans found useful in the United States to the conditions in France. Five different methods have been employed: newspapers, exhibits, posters, pamphlets, and public meetings. 1. A series of articles prepared by the educational division of the Commission have been printed in 36 newspapers, explaining the origin of tuberculosis, the ways in which it can be cured, and the French newspapers are rapidly coming to realise their great opportunity of public health education. 2. The travelling exhibit emphasises the main facts about tuberculosis by means of wall charts. There are also models of a dispensary, an out-of-doors sleeping-porch, and a kinema with films. The exhibit, which is carried on a truck from town to town, is in charge of a directress and has a personnel of chauffeur, moving picture operator, two lecturers, and an advance agent. There are now three such exhibits in operation and within a few months the number will be increased to six. They have already traversed the departments of Eure-et-Loir, Loir-et-Cher, Indre-et-Loire, Cher, Allier, Ille-et-Vilaine, Finistère, Cotes-du-Nord et Loire-Inférieure. 3. Conferences preceding the exhibition have been held in communities of 3000 or more persons, the audiences in many instances numbering 50 per cent. of the population. Special sessions have been arranged for school children, who attend with their teachers, as well as conferences for mothers and meetings in factories. 4. Moving pictures on health subjects form an important part of the programme. Some of the films are scientific presentations of disease; others are animated cartoons on health. The meetings are thoroughly advertised; many posters are put on the walls and the local newspapers carry notices. 5. The Commission has prepared a large variety of brochures in order that the people attending its meetings may have something to take home and study at leisure. The booklets are illustrated by French artists, and a million and a half copies have already been distributed."

Professor Gunn has found that the French people are glad to know the facts about tuberculosis, and he has had the hearty help and coöperation of the préfets and maires, many of whom have acted as chairmen at the meetings arranged by the Commission.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

Meeting of Comitia.

AN ordinary Comitia of the Royal College of Physicians of London was held on Oct. 31st, Dr. NORMAN MOORE, the President, occupying the chair.

The following candidates having passed the required examination were admitted as Members of the College: Dr. J. C. Matthews, Dr. S. A. Moore, and Mr. H. J. Orr-Ewing.

Licences to practise physic were granted to 93 candidates who had conformed to the by-laws and regulations and had passed the required examinations.

Certain College officers and examiners gave their faith to the College.

The following communications were received:—

1. The Secretary of the Royal College of Surgeons, dated July 26th and Oct. 11th, reporting proceedings of the Council of that College on July 25th and Oct. 10th respectively.

Note.—A supplementary letter states that at the meeting of the Council on July 25th it was decided—

(*a*) "To omit the names of universities in Germany and Austria-Hungary from the list of hospitals and schools of medicine and surgery published in the College Calendar as the places from which certificates of the professional education of candidates for the Membership and Fellowship will be received by the College for the year commencing the 1st of August, 1918."

(*b*) "That the desirability of also omitting these universities from the published list of the Conjoint Examining Board should be brought under the consideration of the Committee of Management."

This was referred to the Committee of Management.

2. Dr. Guy Wood, dated Oct. 7th, asking that the Membership, which he resigned in 1900, may now be restored to him.—This was agreed to for the first time, on the proposition of the SENIOR CENSOR.

The SENIOR CENSOR proposed, and it was resolved, that the Licence of the College which was withdrawn from Mr. William Dutton Akers in January, 1912, be now restored to him.

A Latin letter was received from the Fellows of the College serving with the Army in France on the occasion of the quater-centenary of the College, as follows:—

EPISTOLA

a dilectissimis Sociis nostris in Gallia bellum gerentibus accepta.

χαίρομεν. Τὸ εὖ νικόω.

Collegio Regali Medicorum Londinensium quartum saeculum vitae suae feliciter conditum celebranti et quantum jam faustis auspiciis ineunti salutem plurimam dicunt et libentissime gratulantur Socii subsignati, Gesoriaci Bononiensium inter arma collocati. Longum est nomina percurrere tot virorum illustrium qui sine ulla intercapedine continenter honorem Collegii nostri sustulerunt, scientia artem medicinae altius provexerunt, feliciter hominum corpora morbis oppressa ad integram valetudinem revocare docuerunt. Sed quotum quidque invenimus Collegium cujus alumni literas quoque humaniores urbanitate tanta et l pore ornaverint, scientiam omnis generis tutius ingenio aedificaverint, rei publicae insignius profuerint?

Quarto jam anno belli consensu omnium furore teutonico incepti peracto, militantes videmus eheu! qualis nova febrium terris incubuerit cohors, velut e Pandorae pyxide liberata, quot morbo- pediculi necnon muscae, quot vapores noxii attulerint, quanta denique strage nostrorum et totius gentis humanae hostis barbarus Marte illacrimabili maxime abusus sit debellandus. Sed sortes jamdudum faustae, florent arma am- lusque florebunt, praevalebit tandem justitia. Quin etiam (cum licet denique) Pheidippidis verbis sine superbiâ usi, spe victoriae certa Collegium nostrum valedicentes jubemus *χαίρετε νικῶμεν.*

Gesoriaci Bononiensium, A.D. ix. Kal. Oct., MDCDXVIII.

W. P. HERRINGHAM, Major-General.
W. PASTEUR, Colonel.
JOHN ROSE BRADFORD, Major-General.
J. HUGH THURSFIELD, Major.
J. A. NIXON, Colonel.
A. J. JEX-BLAKE, Major.
W. P. S. BRANSON, Major.
GORDON HOLMES, Lieut.-Colonel.
T. R ELLIOTT, Colonel
MICHAEL FOSTER, Major.
CHARLES MILLER, Colonel.
CHARLES J. MARTIN, Lieut.-Colonel.
W. E. HUME, Colonel.
HENRY MACCORMAC, Lieut.-Colonel.
A. M. H. GRAY, Lieut.-Colonel.
S. W. CURL, Captain.

The following answer was addressed to the Fellows of the College serving abroad:—

Accepimus, O Socii, litteras vestras jucundissimas, pro quibus libenter gratias agimus. Quod si graves Reipublicae vices, si cladis nostrorum lacrimabilis, publicas nobis ferias interdicunt, si etiam convivia Moderator, ut ita dicamus, Cicarius denegat, licet tamen vobiscum paululum gaudere, licet Collegium nostrum, per quarta saecula traditum, mirari. Illud vero ex litteris vestris cognitum praecipue laudamus, quod vobis inter arma inter labores inter pericula collocatis non deest tamen erga Collegium pietas, neque litterarum humaniorum cultus. Adsit utinam fausta illa dies, quum ad patriam ad domos ad Collegium redeuntes pacem cum honore referetis. Valete!

Apud. Lond. Prid. Kal. Nov., MCMXVIII.

A committee was appointed to draw up a pronouncement on the subject of influenza, consisting of Dr. F. W. Andrewes, Sir Humphry D. Rolleston, Dr. H. R. Crawford, Sir John Broadbent, and Dr. H. French.

The resignation by Sir Frederick Taylor of the office of Representative of the College upon the Senate of the University of London was accepted with great regret.

The President and Dr. Henry Head were appointed representatives upon the Conjoint Board of Scientific Societies.

The REGISTRAR proposed for the second time the following temporary by-laws:—

1. That Dr. Sydney Walter Curl, being resident abroad, be admitted to the Fellowship *in absentiâ*, any by-law to the contrary notwithstanding.
2. That Dr. Harold Benjamin Day, being resident abroad, be admitted to the Fellowship *in absentiâ*, any by-law to the contrary notwithstanding.

These were accordingly resolved.

A report was received from the Committee of Management, dated Oct. 1st, as follows:—

The committee desire to recommend that the following University be added to the list of institutions whose graduates in Medicine are admissible to the Final Examination of the Examining Board in England under the conditions of Paragraph IV., Section III., of the Regulations—viz., the Emory University of Atlanta.

The committee also report that under the provisions of Paragraph VI., Part I., of the scheme for constituting the Examining Board in England, Dr. W. Hale White and Mr. W. F. Haslam retire by rotation from the committee.

Dr. W. Hale White was reappointed a member of the Committee of Management.

After some formal business the Comitia was dissolved.

THE King has sanctioned the formation of a new branch of the League of Mercy called the Wanderers' Branch. The first President is Colonel R. J. Blackham, now D.D.M.S. of an army corps in France, and the honorary secretary is Lieutenant-Colonel E. F. Falkner. Letters may be addressed to either officer at the Army and Navy Club, Pall Mall, S.W. 1.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

SUBSCRIPTIONS TO THE SECOND APPEAL.

THE following subscriptions have been received up to Monday last, Nov. 4th:—

	£	s.	d.
Sir Rickman J. Godlee..	3	3	0
North of England Branch B.M.A (per Dr. J. Don, Hon. Sec.)—			
Dr. R. S. Hubbersty...	2	2	0
Dr. J. A. Hislop... ...	1	0	0
Dr. H. Carden Pearson	1	1	0
Dr. R. A. Welsh	1	1	0
Mrs. Ethel Bowman...	0	10	0
Dr. H. B. Hunter ...	0	10	0
Dr. W. Murray	1	1	0
Drs. W. A. and E. G. D. Benson	2	2	0
Dr. D. B. Cama	1	1	0
Dr. M. Maclean	1	1	0
Dr. D. Welsh	1	1	0
Dr. J. R. Burn	2	2	0
Dr. J. Hammond ...	1	1	0
Mr. E. Spencer Evans (monthly)	0	10	0
Sir A. Pearce Gould (monthly)	5	0	0

Monthly Subscriptions.

The following monthly subscriptions have been received for October:—

	£	s.	d.
Dr. Vincent Tighe... ...	0	10	0
Dr. G. Grey Turner ...	1	1	0
Dr. W. E. Good	0	10	0
Dr. W. Luffman	0	10	0
Dr. R. Legat	0	10	6
Dr. A. E. Naish	0	10	0
Dr. J. O. Musson	0	10	0
Dr. T. W. Goodbody ...	1	0	0
Sir T. Barlow	0	10	0
Surg. P. G. S. Davis, R.N....	0	10	0
Dr. A. B. Stevens	1	0	0
Lt. J. B. C. Brockwell, R.A.M.C.	0	10	0
Major E. R. Fothergill...	0	10	0
Dr. W. S. Hart	1	0	0
Dr. A. Graham	1	1	0
Dr. Hyla Greeves	0	10	0
Dr. H. Calger	0	10	6
Dr. K. J. Dougall	0	10	0
Dr. A. W Forrest	1	0	0
Dr. T. L. Drapes	0	10	0
Capt. H. L. P. Hulbert, R.A.M.C.	1	0	0
Dr. R. C. Morland... ...	0	10	6
Dr. H. Whitehouse ...	0	10	0
Dr. A. Hawkyard	0	10	0
Dr. W. Stewart	0	10	0

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham Gate, London, S.W. 1, and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Limited.

Obituary.

JOHN WILLIAM SINCLAIR MEIKLEJOHN, M.D. EDIN., L.R.C.S. EDIN.,

DEPUTY INSPECTOR-GENERAL OF HOSPITALS AND FLEETS, R.N.

Deputy Inspector-General Meiklejohn, R.N., who died at his residence, 105, Holland-road, London, on Oct. 31st, was born at Latheron, Caithness, in 1829 and had therefore reached the ripe age of 89 years. After graduating in medicine at the University of Edinburgh in 1851 he entered the Royal Navy as assistant surgeon and was subsequently appointed to the *Illustrious*, a training ship at Portsmouth. Afterwards he became assistant surgeon to the screw steam sloop *Harrier*, which during the Crimean War took part in the operations in the Baltic. For his services Dr. Meiklejohn was awarded the Baltic medal.

In 1860 he obtained the licence of the Royal College of Surgeons of Edinburgh and became staff surgeon four years later. His subsequent service was in the Mediterranean, India, South America, and South Africa, and at various Home Stations. He was appointed fleet surgeon in 1875 and retired in October, 1884, with the rank of Deputy Inspector-General of Hospitals and Fleets.

Inspector-General Meiklejohn was a man of almost encyclopædic knowledge in many departments of natural science, especially in botany; he was a Fellow and at one time on the Council of the Linnæan Society. His extensive travels while in the Navy gave him opportunities of pursuing personal studies, but besides these interests he knew and read widely in Greek, Sanskrit, Latin, French, German, Italian, and Spanish literature and history. Architecture and archæology were other subjects he had studied closely: he was also an authority on Buddhism. For many years he was a member of the Council of the Ray Society and a Governor of the Royal Naval School at Eltham.

He married in 1875 Mary Elizabeth, daughter of Mr. William Reynolds, of Campden Hill-square, who died in 1912. By her he leaves three sons, Mr. R. S. Meiklejohn, C.B., of H.M. Treasury, Lieutenant-Colonel W. L. S. Meiklejohn, of the Indian Army, and Surgeon Lieutenant-Commander N. S. Meiklejohn, R.N.

The War.

THE CASUALTY LIST.

THE following medical officers appear among the casualties announced since our last issue :—

Killed.

Capt. F. C. Harrison, R.A.M.C., attd. Duke of Wellington's Regiment, was a student at Sheffield University and at the Royal Dental Hospital, London, and took his medical qualification in 1915, having previously qualified in dentistry in 1913. Prior to joining the R.A.M.C. he was in practice in Sheffield.

Died.

Capt. N. J. Allan, R.A.M.C., received his medical education at Liverpool University and qualified in 1916. Before joining the R.A.M.C. he held appointments at the Liverpool Royal Infirmary and at the Liverpool Maternity Hospital.

Capt. C. M. G. Campbell, R.A.M.C.

Surg. Lieut.-Com. J. Hadwen, R.N., was a student at St. Bartholomew's Hospital, and qualified in 1907. Prior to joining the Navy in 1910 he was in practice at Gloucester.

Capt. W. L. Millar, R.A.M.C., qualified at Aberdeen in 1906, and prior to joining up was in practice at Forres, where he was honorary medical officer to the Leanchoil Hospital, and was also M.O. of Kinloss parish, and medical referee for several insurance companies.

Capt. T. R. Guilfoyle, Canadian A.M.C., qualified at the Western University, London, Ontario, in 1914, and prior to joining the Canadian Contingent held an appointment at Guelph General Hospital, Guelph, Ontario.

Wounded.

Capt. H. P. Whitworth, R.A.M.C., attd. Scottish Borderers.
Major W. B. Allen, V.C., M.C., R.A.M.C.
Capt. C. F. Hacker, M.C., R.A.M.C., attached Royal Scots.
Major J. B. Scott, M.C., R.A.M.C.
Capt. C. R. Young, M.C., R.A.M.C., attached Shrops. L.I.
Capt. A. F. Argue, Canadian A.M.C.
Capt. F. B. Day, Canadian A.M.C.
Capt. H. F. Brice-Smith, M.C., R.A.M.C., attd. Yorks. L.I.
Major J. S. Levis, M.C., R.A.M.C.
Capt. F. E. Sprawson, R.A.M.C.
Capt. N. H. Little, Canadian A.M.C.
Capt. J. R. Cameron, R.A.M.C., attached Royal Irish Rifles.
Major H. B. Graham, D.S.O., M.C., R.A.M.C.
Capt. C. H. T. Ilott, R.A.M.C., attd. Royal West Surrey Regt.
Capt. R. T. Raine, M.C., R.A.M.C., attd. East Yorks Regt.
Capt. C. H. Seville, R.A.M.C.
Capt. W. B. Wilson, R.A.M.C., attached Devon Regiment.
Capt. A. R. Campbell, Canadian A.M.C.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported :—

Private R. H. Cuthbert, Royal Fusiliers, attached A.P.C., died in England of pneumonia, fourth son of the late Dr. W. H. Cuthbert, of Frinton, Essex.

Second Lieut. P. C. Weaver-Adams died as the result of a flying accident, younger son of Mr. E. Weaver-Adams, F.R.C.S., of Slough, Bucks.

Capt. C. A. Mallam, M.C., Royal Berkshire Regiment, died of wounds, son of the late Dr. G. B. Mallam, of South Hackney, London.

H. M. Thompson, A.I.D., died suddenly in England, second son of Surg.-Capt. M. Thompson, of Richmond, Surrey.

N. M. Haydon, O.T.C., died of pneumonia, youngest son of Dr. E. Haydon, of Newton Abbot, Devon.

Private W. H. Scott, Essex Regiment, formerly Lincs Regiment, killed in action, second son of the late Dr. I. Scott.

Lieut. C. W. Sheppard, R.E., formerly Oxford and Bucks Light Infantry, died of influenza and pneumonia, eldest son of Dr. W. J. Sheppard, of Putney, London.

Second Lieut. F. B. Bond, R.F.A., killed in action, only child of Dr. B. W. Bond, of Godalming, Surrey.

Gunner C. G. Kelly, R.F.A., killed in action, son of the late Dr. B. Kelly.

Colonel Champe C. McCulloch, jun., U.S.M.C., executive officer of the Board for Collecting and Preparing Material for a Medical and Surgical History of American Participation in the European War, has arrived in France. During his absence Lieut.-Colonel Casey A. Wood, U.S.M.C., will be in charge of this work in the Surgeon-General's office at Washington.

OBITUARY OF THE WAR.

GEORGE SELBY BROCK, M.B., CH.B. EDIN.,

CAPTAIN, INDIAN MEDICAL SERVICE.

News has been received by cable of the sudden death on Oct. 12th, from influenza, at Rawalpindi, of Captain G. Selby Brock, of the Indian Medical Service. Only son of Dr. George Brock, of Rome, he was born in the Orange Free State 32 years ago, and educated at Uppingham School and at the Universities of St. Andrews and Edinburgh, from which last he graduated in 1910, joining the Indian Medical Service in the following year. At the outbreak of the war he went to France with the first Indian contingent and served in Flanders, thus earning the 1914 Star. In the following year he returned to India to regimental duty at various stations, for the last two years at Kohat. Thence he was transferred to Rawalpindi in June of this year on his appointment as adjutant of the newly instituted "School of Instruction for Temporary I.M.S. Officers," which he had helped to organise there. Captain Brock was a fine athlete, having at Uppingham captained the School Fifteen, and while at Edinburgh won the Inter-University hurdling championship. He was also a good linguist, speaking French, German, and Italian, and shortly before his death was engaged on, and had nearly completed, the compilation of a manual on the Pushtu language and Afridi dialect. His personal qualities made him a general favourite, and his loss will be much felt, especially at the new "School of Instruction," to the success of which his attractive personality, his good influence with the young Indian officers, and his enthusiastic and excellent work were greatly contributing. He leaves a widow and two children.

GEOFFREY MOORE COWPER, M.R.C.S. ENG.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain G. M. Cowper, who died of wounds on Oct. 3rd, was educated at Darlington Grammar School and Trinity College, Cambridge, going on to St. Bartholomew's Hospital, London, where in 1914 he took the Conjoint Diploma. He joined the R.A.M.C. on the outbreak of war, and after six months of duty as anæsthetist at a base hospital in England he went to Le Tréport with a hospital unit, where, in addition to his regular duties, he had charge of surgical huts and acted also as honorary secretary and treasurer of the officers' mess. Last year he became attached, first to a West Riding regiment (Duke of Wellington's), and later to a field ambulance. Finally, just before his death, he was transferred to a Dorset regiment, and it was while working at his regimental aid-post that a direct hit by enemy artillery inflicted wounds which shortly proved fatal. Captain Cowper's superior officers write of his whole-hearted devotion to the work in hand, whether professional or recreative, which made him a true comrade, while his considerateness endeared him to the patients and nursing staff. His loss is keenly felt by all his associates.

PERCIVAL THOMAS PRIESTLEY, M.B., CH.B. BIRM.,

MAJOR, ROYAL ARMY MEDICAL CORPS.

Major P. T. Priestley, who died at Salonika on Sept. 28th, was only child of the late Rev. Thomas Priestley, vicar of Albrighton. He was educated at St. Michael's College, Tenbury, Shrewsbury School, and Birmingham University, qualifying M.B., Ch.B. in 1913, and then holding resident appointments at the Birmingham General Hospital. He joined the Birmingham University O.T.C. on its formation and received later a commission in the Special Reserve of the Royal Army Medical Corps. He was sent to France on August 14th, 1914, and a year later to the Near East, where he served at Anzac until the evacuation and then at Imbros and Alexandria. After sick leave and a period of home service, during which he had charge of Lady Tennyson's Hospital at Freshwater, he was sent in June, 1917, to Salonika, where he died of influenza after a few days' illness. Major Priestley married in January, 1916, Ellen, daughter of Charles F. Underhill, of Burton-on-Trent.

JAMES TOWERS KIRKLAND, M.B., CH.B. GLASG.,

MILITARY CROSS; CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain J. T. Kirkland, who was killed in action on Sept. 18th, at the age of 36 years, was youngest son of Archibald Kirkland, of Newmains. He was educated at Glasgow High School and Glasgow University, graduating there in 1909. At school he was known as a good footballer, playing for the High School Rugby team. After graduation he spent a year holding house appointments at the Royal Infirmary, Glasgow, and afterwards at the Maternity Hospital. From this time until the outbreak of war he was obtaining experience as locum tenens in private practice with the intention of specialising in gynæcology later. He obtained a commission in the R.A.M.C. in November, 1914, was awarded the Military Cross at the beginning of 1916 for services at the Battle of Loos, and was mentioned in Sir J. French's despatches. He had charge of one of the first clearing stations at Festubert. Excessive strain caused cardiac dilatation and general nervous prostration, on account of which he obtained his discharge from the R.A.M.C., but he determined to join up again and resumed his rank of captain, doing arduous and dangerous work with a field ambulance until he was killed at his post. One who knew Captain Kirkland well writes that the medical profession has lost a member who would have made a good name for himself.

Captain A. ALLAN PARKER, *M.C.*, C.A.M.C., who died of wounds on Oct. 12th at the age of 26 years, was a native of Mimico, Ontario. He graduated in medicine at the University of Toronto in 1914, sailed from Canada in May, 1916, and after arrival in England was posted to Etchinghill. He went to France in December, 1916, and was on the strength of No. 6 Canadian Field Ambulance, serving for short periods as M.O. with a battalion of the 1st Canadian H.A. and the 1st Canadian C.C.S. He was awarded the Military Cross in October, 1917.

ERNEST HOWARD GLENNY, M.R.C.S. ENG.,

LIEUTENANT, ROYAL ARMY MEDICAL CORPS.

Lieutenant E. H. Glenny, who died at Basra on Oct. 9th, aged nearly 27 years, was youngest son of Edward H. Glenny, of Manor Park, London. He was educated at Redland Hill House, Clifton, and at the Leys School, Cambridge, and after passing the London Matriculation Examination he took a special course of business training at Kensington College, from there secured a post in the London School of Economics, and later served in the office of the Industrial Trust, Ltd. Deciding in 1913 to take up medicine, he entered St. Bartholomew's Hospital, London, gained the Willett Medal, and qualified M.R.C.S. and L.R.C.P. in 1917. After three months as house physician there he was called to join the R.A.M.C., and went straight from Blackpool to Mesopotamia, where he was appointed medical officer at No. 3 British General Hospital last March. There he remained until he was removed on Oct. 4th to the Officers' Hospital, Beit Naama, Basra, seriously ill with pleuro-pneumonia, from which he died five days later.

Captain L. E. ROBERTS, A.A.M.C., who was killed in action on August 29th, at the age of 33 years, was son of J. Albert Roberts, of Geelong, Victoria. After a successful career at the Geelong College he obtained a resident scholarship at Ormond College, Melbourne University, which he held during his University course. In athletics he took a keen interest, being a member of his school football and shooting teams. At the University he represented his College and University in football. Completing his medical course some months earlier than usual, he enlisted in August, 1917, spent some time at No. 1 Australian General Hospital, Rouen, and joined the 8th Australian Field Ambulance early in August last. He was fatally wounded by a shell while his battalion was in action near the River Somme, and died some hours later at the C.C.S. at Daours. Though with his division for only a short time, he had already shown himself a man of courage and ability, and his death is keenly felt by his associates.

Second Lieutenant JAMES STUART RICKETTS, R.F.A., who died on Oct. 5th in a French general hospital from wounds received in action on August 29th, was eldest son of the late Dr. T. F. Ricketts. Educated at Oundle, Lieutenant Ricketts passed into Woolwich with a view of joining the Royal Engineers. Prevented by illness from so doing, he decided to adopt his father's profession, and became a medical student at King's College. His health being restored, he volunteered for service in the Air Corps, but failing to pass the final health standard test, he took a cadet nominationship from his old school and obtained his commission early this year. In the short time which he spent on active service he won golden opinions from his superior officers.

THE HONOURS LIST.

The Albert Medal for gallantry in saving life at sea has been awarded to Surg.-Lieut. William Fryer Harvey, R.N.

On June 28th, 1918, two of H.M. torpedo-boat destroyers were in collision, and Surg.-Lieut. Harvey was sent on board the more seriously damaged destroyer in order to render assistance to the injured. On hearing that a stoker petty officer was pinned by the arm in a damaged compartment, Surg.-Lieut. Harvey immediately went down and amputated the arm, this being the only means of freeing the petty officer. The boiler-room at the time was flooded and full of fumes from the escaping oil. This alone constituted a great danger to anyone in the compartment, and Surg.-Lieut. Harvey collapsed from this cause after performing the operation and had to be hauled out of the compartment. Moreover, at any time the ship might have broken in two, and all hands were fallen in on deck, wearing lifebelts, at the time in order to be ready for this eventuality. Surg.-Lieut. Harvey displayed the greatest gallantry and disregard of his personal safety in descending into the damaged compartment and continuing to work there amidst the oil fumes at a time when the ship was liable to sink.

Correspondence.

"Audi alteram partem."

INFLUENZA AND PREVENTIVE INOCULATION.

To the Editor of THE LANCET.

SIR,—That the conclusions reached at the War Office Conference "on preventive vaccination for influenza" could only be of a tentative character was obvious. Bricks cannot be made without straw, and dogmatic advice on the prevention and cure of a disease cannot be given in the absence of accurate data as to its causation. In these circumstances would it not have been wiser if the committee had made a more frank confession of our present state of ignorance on the subject under discussion, had indicated the lines along which observation and research could most profitably go, and, if it felt constrained to make some practical suggestion in the way of vaccine prophylaxis, might this not have been done in a manner which should lay less claim to specificity for the remedy offered? Is there not present a slight savour of "intensive cultivation" about the whole argument, as though military necessity led to a forcing of the pace? Many of your readers must have been struck by the lack of cogency in the conclusions arrived at by the committee, as published in THE LANCET of Oct. 26th. After stating in § 1 that "there was considerable doubt as to the primary etiological significance of the *Bacillus influenzæ* of Pfeiffer, and ..... the existence of some as yet undiscovered virus must be regarded as possible," they say, in § 2, that "the general question of the employment of a bacterial vaccine for the control *of the incidence* and severity of the epidemic was discussed, and it was unanimously agreed that inoculations with a *suitable* vaccine might be expected to be of value *in both directions*." (The italics are mine throughout.) The committee then passes on to consider the selection of a "suitable" vaccine, and "it was agreed that the *Bacillus influenzæ*, the pneumococcus, and the streptococcus *only* should be employed" (§ 3). If it should turn out to be true that the primary cause of the present epidemic is some as yet undiscovered virus, the committee fails to make it clear in what way the use of a mixed vaccine of Pfeiffer's bacillus, pneumococcus, and streptococcus can affect *the incidence* of the disease. If it is merely the severity of the disease—as contributed to by secondary infections due to the above-named micro-organisms—that is likely to be influenced beneficially, might not the committee have said as much without losing caste? And might not the committee have confided in us why the veto expressed in the word "*only*" was decided upon?

So far we have at least got definite advice. But now follows a statement which, though calculated to act as a corrective to the empiricism underlying the practical conclusions, suggests that the committee has really very little faith in its own nostrum, at least as a preventive for the present epidemic; for the fulfilment of the conditions laid down as a desideratum in the preparation of the vaccine is likely to take so long a time that it will outlast (I trust) the present outbreak. The desideratum is "that a number of different strains and types of each organism should be utilised in the preparation of the vaccine, and that these strains should have recently been isolated from cases occurring during the present epidemic and should be submitted to strict tests as to race and type *prior to use*." But despite this considerable qualification, involving highly expert and lengthy technique, the committee proceeds (§ 4) to give "the relative proportions of the different organisms and the dosage of the vaccine," as though all this work of differentiation of "strain" and "type" and "race" had been already done! The formula given does not seem, on the face of it, to be very different from that of a good many vaccine prophylactics for "catarrh," differing chiefly in the absence of *M. catarrhalis*. But this difference does not go far to save the result of the committee's deliberations from coming very near to *ridiculus mus*. In regard to the constitution of the formula, I should like to endorse emphatically the criticism appearing in Dr. John Matthews's letter in THE LANCET of Nov. 2nd as to the suggested dose of Pfeiffer's bacillus. Years ago, when it was very difficult to cultivate this bacillus, and we used fresh blood for the purpose, even then securing very little growth, it was found that small doses of a vaccine made up from such growth often gave smart "reactions." This fact led to the custom of employing a small dosage in general when using Pfeiffer's bacillus either for preventive or for curative vaccination. Whether the "bite" of these older vaccines was due to the admixed blood from the medium, or to "aggressins" or to some other property that seems common to vaccines from most micro-organisms when grown with difficulty, is not known. But it seems certain that vaccines prepared from cultures of Pfeiffer's bacillus grown in profusion upon Matthews's trypsin blood medium are much less innocuous than those prepared from cultures on ordinary blood media. And, although the committee does not expressly say this, it would appear essential that the bacillus should be cultivated upon Matthews's medium in order to obtain sufficient growth for the purpose of such a large quantity of vaccine as is here proposed for military use. During the past two years I have found, in the employment of such vaccine in a series of cases, that the appropriate dosage is quite ten times the size I was formerly in the habit of using.

I am, Sir, yours faithfully,

Harley-street, W., Nov. 3rd, 1918. THOMAS HORDER.

To the Editor of THE LANCET.

SIR,—As some time must elapse before the most suitable prophylactic and therapeutic doses of vaccine for influenza are agreed upon, a brief note upon the experiences of those who have used them should be of service.

Prophylaxis.—I agree with Dr. John Matthews (THE LANCET, Nov. 2nd) that the doses recommended at the War Office Conference are inadequate, and likely to imperil the value of a vaccine. Experience with other diseases teaches that in order to obtain lasting immunity large doses must be given. For typhoid, doses of 1000 million are used. In pneumonia, Sir A. E. Wright suggested a dose of 1000 million for prophylaxis and a dose of 500 million at the outset of a pneumonia attack. Lister in his South African studies went further and used three inoculations at seven days' intervals, each dose consisting of 6000 million cocci of each group against which immunity was desired. I do not know how many strains were used, but probably 18,000 to 24,000 million pneumococci were given in one dose. As compared with these a dose of 30 million *B. influenzæ* seems absurdly inadequate. The period of immunity is probably proportionate to the dose used. Whereas a dose of 1000 million may confer immunity lasting several months, the immunity from a dose of 30 million probably lasts but a few days. 100 million pneumococci and 40 million streptococci are advised as a first dose, but as these are composed of several different strains the actual immunising dose against a particular strain would be as little as 10 or 20 million.

My own plan has been to inject as a first dose 100 million pneumococci, 100 million streptococci, and 50 million *B. influenzæ*, and after seven days double these amounts. A certain number of cases have been injected with pneumococci and *B. influenzæ* only. Such doses probably confer immunity for a few weeks only, but there is no reason why a third or fourth dose, each twice the previous one, should not be injected at weekly intervals. About 200 cases have been injected and these were mainly chosen from contacts—doctors, nurses, relatives of patients. In no case was there a noticeable general reaction. There was no interruption of work, the persons injected followed their ordinary duties. So far I know of no case of influenza occurring in an inoculated person. There was no sign of increased susceptibility, although they were exposed to infection and cases of influenza occurred in non-inoculated persons living in contact with them.

Treatment.—Vaccines are recommended for subacute and chronic cases, but not for severe cases of secondary broncho-pneumonia. The doses recommended are 6 million *B. influenzæ* in subacute cases, and if used in broncho-pneumonia 1½ million. Again, I consider these doses inadequate. Cases of pneumonia and broncho-pneumonia have been treated by vaccines for years. In acute lobar pneumonia I give doses of 100 million pneumococci to an adult man as soon as possible after the onset of the disease. In broncho-pneumonia treatment cannot be given early, as the causal organism must be determined, and in any case smaller doses than the above are advisable. In a series of Friedländer's pneumonia I used doses of 30 to 50 million bacilli with good results. In mixed streptococcic and pneumonic broncho-pneumonias I have

used doses of 30 to 50 million of each organism. With influenza my present plan is to inject 50 million pneumococci, 50 million streptococci, and 30 million *B. influenzæ* as soon after the onset as possible. In no case in which the vaccine was given within 24 hours have lung complications afterwards developed. When broncho-pneumonia has developed before the patient is seen I give the same dose, repeating or even increasing every other day or sometimes daily, and have several striking charts showing the effect of the vaccine in bringing down the temperature and limiting the severity of the disease. I feel sure that similar results cannot be obtained by the use of doses of 1½ million *B. influenzæ*. I would urge the immediate treatment of influenza by giving vaccine in adequate doses within a few hours of the onset. Hesitation and delay allow the cases to get out of hand, and little can be done for the profound toxæmia which is present later.

The letters of Dr. Wm. Collier (THE LANCET, Oct. 26th) and Sir J. W. Moore (Nov. 2nd) on the clinical aspects are very interesting. In my cases epistaxis has been constant in children and young adults, less common in older patients. Albuminuria to some extent has been a constant sign. In the more severe cases there has been a definite nephritis. Bacteriological examination of catheter specimens of urine has usually shown streptococci with frequently *B. coli*. In women patients menstruation is brought on prematurely or there may be hæmorrhage midway between the periods. In the severe cases there is a characteristic facies, swollen and somewhat resembling that of measles without the marked rash of the latter, though a slight morbilliform rash is frequently seen. In one case there was an abundant crop of purpuric spots on the legs. In many ways this type of influenza seems to resemble, apart from the rash, the virulent attacks of measles seen in races that have had no previous experience of that disease. The frequent association of influenza with measles seen during the last two years is also interesting from this point of view. Lieutenant-Colonel Macdonald has recently described an epidemic of purulent bronchitis complicating measles occurring in New Zealand troops in which *B. influenzæ* was found in 72·5 per cent. of cases bacteriologically examined. A vaccine containing 300 million *B. influenzæ* was used with good results. In the spring of this year an outbreak of measles occurred in a large public school. One boy after a severe attack, followed by two days' normal temperature, developed acute suffocative bronchitis and died in 48 hours. *B. influenzæ* was the predominant organism in his sputum. Four other boys developed the same condition, but were promptly treated by a vaccine containing *B. influenzæ* made from the sputum of the fatal case, and recovered.

I am, Sir, yours faithfully,

Birmingham, Nov. 4th, 1918. W. H. WYNN.

To the Editor of THE LANCET.

SIR,—I am inclined to take the view that the primary infection in this epidemic is a streptococcus, for the following reasons:—

(1) *Bacteriological.*—Pfeiffer's bacillus is by no means always present, whereas streptococcus is present both in the mucus of the naso-pharynx and also in the sputum. I made up a vaccine on Oct. 17th from the mucus of the naso-pharynx of an influenza patient; the culture was practically a pure streptococcus, but as the pathologists maintained that the organism was unknown I did not use the vaccine clinically till last week. I now find that a dose of 2 million in an acute case is frequently followed by marked improvement in temperature and general well-being within 24 to 48 hours, but a dose of 4 million in milder cases is followed by a slight reaction, and I have discontinued this dose. I have found that an injection of 2 to 4 million seems to help clear up the recurring temperature at the end of an attack.

(2) *Clinical.*—This epidemic differs from Pfeiffer's bacillus epidemic in that old people seem to escape lightly and the severe nervous symptoms with depression do not follow the attack. The fibrinous bronchitis which is sometimes present is more likely due to a streptococcus than either to a pneumococcus or Pfeiffer's bacillus. I have seen a few cases of fibrinous exudate on children's tonsils, at first suggestive of diphtheria but more characteristic of streptococcus, for there is no real membrane. The pneumonia cases are not like the pneumococcus pneumonias; there is often lobular pneumonia (though I have had some lobar pneumonias) and the sputum is sometimes pure blood.

I have been interested to read what the conference at the War Office decided on Oct. 14th as to preventive inoculation, but I should be afraid of giving 40 million streptococci as a preventive dose during an epidemic in case the individual might be incubating the disease at the time. For example, in one house I gave a preventive inoculation of 4 million streptococcus vaccine to each of six people, one of whom had been nursing a case of influenza pneumonia a few days previously; she was the only one of the six who had any reaction; four hours after the inoculation she felt pain at the lower part of the left side of the chest, and her temperature rose to 100° F. next day, but was normal within 48 hours. The vaccine I have been using I sterilised by incubating for 24 hours with 0·5 per cent. carbolic, so that the dosage is necessarily a small one compared with the vaccine sterilised by heat, as recommended in THE LANCET of Oct. 26th. I notice in that article that a dose of 8 million streptococci is recommended by the War Office Conference in a subacute or chronic case; this would about correspond with my experience, allowing for the different method of sterilisation, although I am inclined to think that 8 million is rather too large a dose to begin with.

I am, Sir, yours faithfully,

Oxford, Nov. 5th, 1918. HENRY T. GILLETT.

THE INFLUENZA EPIDEMIC.

To the Editor of THE LANCET.

SIR,—In your leading article of last week upon the influenza epidemic you discussed the problem whether or not the present epidemic wave ought to have been expected or not. That is a question which I am not now concerned to debate. But I would point to the fact that the present prevailing wave of the epidemic actually *was* expected, whether for good reasons or bad.

On August 5th I sent you an abstract of the results of an organised inquiry which had been made in Germany into the bacteriology of the primary wave of the influenza pandemic which showed itself in the late spring, and invited you, if you thought fit to publish this, to mention that it had been put at your disposal in order to draw the attention of workers in this country to the German experience, and to say that the Medical Research Committee would be grateful if the results obtained in this country might be communicated, so that a similar collation of experience here might be made "with a view to the organisation of such coördinated work as may be found possible for the study of the secondary waves of the infection that are to be expected."

In your issue of August 10th you published this information, but without a statement either of its provenance or of its chief purpose. As a matter of history I would record that I cannot recall meeting any pathologist during last July whose attention had been drawn to the records of the pandemic of 1889–1890, and also to the work done in Europe upon the primary wave of the present pandemic, who did not as a result confidently expect a secondary wave, with probably more serious results, to show itself in this autumn or early winter. I am, Sir, yours faithfully,

WALTER M. FLETCHER.

15, Buckingham-street, Strand, W.C., Nov. 6th, 1918.

*** The letter accompanying the abstract sent to us on August 5th by Sir Walter Fletcher was unfortunately not understood by us.—ED. L.

To the Editor of THE LANCET.

SIR,—There are sentences in your leading article of Nov. 2nd which may, I think, create a false impression upon the minds of some readers. "The experience of all previous epidemics in London is that excessive mortality from influenza in any single epidemic does not continue beyond a period of about six weeks." You may, of course, be using the word "excessive" in some peculiar sense, but it is a fact that in 1891, while the total number of influenza deaths registered in the first quarter of the year for London was 24; during each of the 11 weeks beginning with that terminating on May 2nd at least 37 deaths from primary influenza were recorded, and in eight of these weeks the number was greater than 100, while in the succeeding winter epidemic 30 or more deaths were recorded in each of 12 weeks. "The occurrence of an epidemic of influenza followed by an even more severe epidemic of the same disease within three months is almost unknown." There is much virtue in the "almost."

The summer influenza of 1891 produced 50–60 cases in the Wolsingham division of the Weardale rural district, population 3169, during July; the secondary epidemic, beginning on Oct. 18th, gave rise to about 700 cases.[1] The two great London epidemics of that year were separated by an interval of little more than five months. "Summer epidemics are unusual." Yet even within the period of the Registrar-General's statistics to which you refer there was one considerable summer epidemic, while the outbreak of 1833 culminated between April 24th and May 21st, and the historically famous epidemic of 1782 reached its maximum in June.

Upon the general issue whether, after what happened this summer, an autumn recrudescence was to be expected, I doubt if your judgment will be affirmed by a majority of epidemiologists. The sequence of events in the period commencing with December, 1889, was as follows: There was first in the winter 1889–90 an explosive epidemic, possessing the typical features of a primary outbreak of influenza—viz., an approximately symmetrical distribution in time and close concentration around the maximum—features beautifully displayed in Leichtenstern's graph of the Munich epidemic drawn from notification records. The three secondary epidemics of 1891, 1891–2, and 1893–4 particularly the first, were of a different form—viz., less nearly symmetrical and giving a less lofty flattened curve, the interval between the rise and fall of the curve being much longer than in the primary outbreak.[2] Creighton was of opinion that this feature of recrudescence, the appearance of secondary waves of less prevalent but much more fatal disease, was unprecedented. His conclusion may be too absolute. The year 1676, for instance, had more deaths in London than 1675, which gave material for Sydenham's classical account of epidemic influenza. But even if we accept Creighton's view we shall naturally give much weight to the latest epidemic constitution, that of the "nineties." Nor shall we have any difficulty in interpreting the disparate epidemic forms, a short, sharp, symmetrical outburst suggesting a unitary process, a long drawn-out, skew curve implying the combined action of more than one cause group.

Now the summer epidemic of this year was an excellent example of the quasi-symmetrical type. Having had the opportunity of analysing the incidence upon a large body of men in this country, I can testify to its complete identity of form with that of the primary wave in 1889–90. This having occurred, we should naturally fear that the sequel might be worse than in 1890. If a primary epidemic by ill-luck develops in the summer, then a secondary epidemic having its first chance of appearing in the autumn and winter will, if it do occur, be particularly mortal. The reason is plain; the secondary epidemics of the "nineties" were fatal, partaking, as, perhaps, Sydenham would have put it, of the pneumonic constitution; in modern parlance there was much secondary pneumonia. The influence of season upon respiratory complications needs no discussion.

We might indeed have hoped that the precedent of 1890 would be followed and a year skipped, but we could not be sure that the 1891 example might not be adopted when we should be faced by a serious mortality. This is just what has happened. To have stated in August that it was bound to happen would have argued ignorance of the earlier history; to say that it was very likely to happen and to concert measures for systematically studying the course and alleviating the inconvenience, was plainly the correct procedure. Such a procedure was actually followed in at least two of the great Departments of State, with the result that we shall eventually possess much more accurate epidemiological studies of the recent than of any previous outbreaks. You have unwittingly done some injustice to the many able epidemiologists of this country in suggesting that what has happened either did take, or ought to have taken, them by surprise. The medical officer of health of the County of London in particular, who has been steadily drawing attention to the epidemiological importance of trailing epidemics of influenza since 1913, has just cause for complaint.—I am, Sir, yours faithfully,

MAJOR GREENWOOD,
Captain, R.A.M.C.(T.F.); Reader in Medical Statistics, Univ. London; Director of Medical Research Subsection, Ministry of Munitions Health and Welfare Section).

Nov. 3rd, 1918.

[1] See Parsons, "Further Report on Epidemic Influenza." C. 7051, 1893, p. 9. [2] Parsons, op. cit., p. 11.

THE TREATMENT OF INFLUENZA.

WE have received a number of letters dealing with special points in the treatment of influenza.

Surgeon Lieutenant R. Murray Barrow, R.N. (H.M.S. *Canada*), suggests a form of treatment which he has found successful in a recent case which was developing rusty sputum and other signs of pneumonia. Five grains of sodium salicylate dissolved in 8 c.cm. of sterile water were injected into the basilic vein, followed by 1/16 gr. of strychnine hypodermically, the injections being repeated at six-hourly intervals. The relief of pain was immediate, the sputum lost its rusty colour, and the cough practically disappeared within 12 hours.

Dr. Walter Kidd writes: "No doubt the use of permanganate of potash in a saline solution for gargling and sniffing, as recommended by the Local Government Board, is an excellent local disinfectant for lessening the risk of influenza. But is there any respect in which it is not inferior to the use of iodine inhalation for this purpose? The use of tincture of iodine in hot water is, on the one hand, much easier for the majority of persons, including children, and the one process of inhaling this moist vapour reaches effectually both the nasal passages and the pharynx, and on the other its germicidal power is, I believe, considerably greater than that of permanganate of potash."

Dr. R. W. Allen states that the vehicle he uses for the intravenous injection of garlic oil is pure ether. In uncomplicated cases he gives an initial daily dose of ½–1 minim of the oil, and suggests the trial of ½-minim doses twice or thrice daily in cases complicated with pneumonia. He has had no such complicated cases, however, since using the remedy. Severe paroxysms of coughing may follow the injection, due, Dr. Allen believes, to the ether. A draught of cold water gives relief.

Mr. Walter Allingham, M.R.C.S., writes that having proved the antiseptic properties of garlic in his treatment of wounded soldiers he decided to try a non-official preparation known as tri-methenal allylic carbide compound in the treatment of influenza. Since adopting this preparation in 80 consecutive cases, with the exception of two he has had no serious complications; in no case has the temperature remained up over 48 hours, and in many instances a normal temperature has been regained in 24 hours, patients feeling easy and wanting food. Of the two exceptions one was a case of pulmonary tuberculosis and the other had severe gastric symptoms. Before adopting the preparation high temperatures persisted in most cases for 5–6 days, complicated by severe bronchial catarrh and in some instances pneumonia.

Major Geo. Stoker, R.A.M.C., recommends the treatment of pneumonia by the continuous inhalation of oxygen from a gas-bag with a soft rubber nose-piece passing up into one nostril.

INFLUENZA, OR A NEW DISEASE.

To the Editor of THE LANCET.

SIR,—In the interesting leading article in THE LANCET of Oct. 26th summarising the Memorandum of the Local Government Board it is suggested that the present epidemic is similar to the previous pandemic of 1889–92, and also to the pandemics of 1803, 1833, and 1837–38. It may be that the clinical features observed in the epidemics of past years are similar to those seen in the present epidemic, but it is equally certain that many of the cases now seen present clinical features which are quite distinct from the cases of so-called "influenza" or "influenza colds" which we are accustomed to see every year. There are probably various febrile and catarrhal conditions which are, for lack of definite knowledge of their true nature, grouped under the term "influenza." But if this term is accepted for the present epidemic, it is well to be clear about the clinical features seen in many of the cases.

Whilst attached to the Military Hospital, Aylesbury, in the winter of 1915–16 we received a number of cases from Halton Camp which presented well-defined clinical features. The patients were admitted with fever ranging from 102° to 104° F., bronchitis, and toxæmic symptoms. There was in some cases blood stained sputum, which on microscopic examination showed streptococci as the predominating organism. The cases were frequently fatal, and post mortem the signs were those of a septic capillary bronchitis. Pfeiffer's bacillus was not found in any of these cases, neither in the sputum nor post mortem in the lungs. I was struck by the frequency of these cases occurring in particular huts, and it was remarked that new recruits arriving in these huts were more vulnerable to the disease. I sent in a report on the subject to the War Office describing these cases, with certain recommendations regarding prophylaxis, and it doubtless

received the attention it merited. It did not occur to myself or any of my brother M.O.'s that these cases were "influenza," and the medical officers of Halton Camp did not send them in as "influenza." For want of a better term we labelled them *septic bronchitis*, but there was no doubt in my mind that we had to deal with a definite clinical entity, probably caused by a specific micro-organism or an organism whose virulence had been greatly increased by "*passage*."

I have recently had under my care several cases having clinical features almost identical with the cases I had previously seen at Aylesbury. The following are the clinical features :—

Onset: Sudden, with fever temperature 103-105°, shivering or rigor, pains in the back and limbs. Course: Temperature keeps up for several days, with delirium at night. Cough: Irritable cough with frothy sputum, occasionally blood stained. Frequent symptoms are pharyngitis, dryness of the mouth and throat, and pain in swallowing. I have not noted the slowness of the pulse referred to by Dr. Wm. Collier in THE LANCET of Oct. 26th, but the other symptoms he describes are similar to those seen in my own cases. The milder cases show a fall of temperature in four or five days, the chest symptoms disappear; the more severe cases show great prostration and toxæmic symptoms, with dry tongue, and last a fortnight or more. It is amongst these that the fatal cases are seen. Several members of one household may be attacked; especially does infection extend to persons sleeping in the same room.

In my report to the War Office I laid special stress on overcrowding and the danger of a number of men sleeping in one hut.

Besides this type of case other forms are seen in the present epidemic resembling the ordinary influenzal colds, and cases where patients have got up too soon after an "influenza cold" and have developed pneumonia. But these are quite distinct from those first described, which might be called until their etiology is cleared up "*epidemic septic bronchitis*." What is the nature of these cases? Are they due to Pfeiffer's bacillus or what is the infective agent? Until this is known we shall not be on firm ground regarding treatment.

I am, Sir, yours faithfully,

Wimpole-street, W., Oct. 28th, 1918. J. LANDMAN, M.D.

To the Editor of THE LANCET.

SIR,—With reference to Dr. Wm. Collier's letter in THE LANCET of Oct. 26th under the above heading, judging by the history, symptoms, and physical signs, it would appear that cases of pneumonia now occurring are of two varieties: (1) that occurring during an attack of influenza and following the usual course in such cases; (2) the variety consisting of an almost instantaneous onset in a person previously well as a rule. This latter variety presents the peculiarities mentioned in Dr. Collier's letter, and, in addition, in the cases I have seen, a tendency to looseness of the bowel and very early expectoration of frothy, bright red sputum. This appears to be a different disease.

The last two cases I have seen will serve as an illustration. One man on being asked how long he had been ill replied: "I was knocked endways this morning at 2 A.M., suddenly." The other said: "I hadn't been out of my hammock five minutes when I suddenly collapsed." The tone in which they replied conveyed quite clearly to my mind that they were more than considerably disgusted and surprised at the sudden ruthlessness of the onset of their troubles. Before the day had closed (the first day of their illness) they were both expectorating bright-red sputum, and subsequently showed the symptoms and signs mentioned in Dr. Collier's letter, and, in addition, albuminuria and prolonged delirium.

I am, Sir, yours faithfully,

Eston, Yorkshire, Oct. 31st, 1918. H. B. HILL, M.R.C.P.

PS.—The bacteriological report, dated Nov. 6th, states: "Streptococci, a Gram-positive coccus and diphtheroid bacilli present. No tubercle, no pneumococci, no influenza."

THE "MYSTERIOUS DISEASE" IN AUSTRALIA, 1917.

To the Editor of THE LANCET.

SIR,—It may be of interest to report at the present moment that (as I learn from a personal communication just received) Dr. Breinl is able to confirm, from recent observations, the view expressed by him in the *Medical Journal of Australia*, March 23rd, 1918, that the virus of this disease is identical with that of poliomyelitis. Dr. Breinl's conclusions are based upon pathological and experimental research, and some of his slides will, I hope, shortly arrive in this country. The "mysterious disease" was, clinically, a polio-encephalitis, marked by convulsions and tremors rather than by lethargy; epidemiologically, it appeared first in the spring, affecting children principally; later, adults were implicated. Pathologically, neuronophagia was present, though not abundantly; hæmorrhagic foci were noticed.

Happily, Dr. Breinl's experimental achievements would seem to preclude the possibility of the variations, from "standardised" encephalitis lethargica and from "standardised" poliomyelitis alike, being considered to justify yet another new name, and a new notification entity. Otherwise we might now be hearing of Encephalitis convulsiva, *var.* Australiatica (1917).—I am, Sir, yours faithfully,

Harley-street, W., Oct. 29th, 1918. F. G. CROOKSHANK.

INFLUENZA AND THE DIFFERENTIAL DIAGNOSIS OF SANDFLY FEVER.

To the Editor of THE LANCET.

SIR,—My attention has been called to an annotation in THE LANCET of Sept. 14th, entitled "Sandfly Fever or Influenza." I note that, according to Professor G Sampietro, writing in the *Annali d'Igiene*, there is a belief prevalent in Italy that the epidemic which began in the second half of last May, and was prevalent in Spain, and thence spread over Europe, is identical with the so-called three-day fever or sandfly fever, otherwise known as phlebotomus fever.

I think I may claim to have seen in the Island of Lemnos more than 500 cases of each of these diseases, and feel quite confident in asserting, as the result of my experience of their etiology and clinical course, that such condition constitutes a separate, distinct, and definite clinical entity. The clinical picture as described in THE LANCET of the epidemic in question coincides with my experience, but I notice that no mention is made of a very constant symptom which I have come to regard as quite pathognomonic of the disease—namely, a decided tremor of the tongue which is invariably present during at least some period of its course. No cases of this disease were met with last year, but, on the other hand, I had opportunities of studying many hundreds of cases of phlebotomus fever.

When the first cases of the so-called influenza occurred this year they were at first thought to be cases of phlebotomus (sandfly) fever, but it was soon seen that the symptoms, although having a superficial resemblance, were very different from what we had been accustomed to in the previous year. The most prominent signs and symptoms of each disease may be tabulated thus :—

Phlebotomus Fever.	*"Spanish" Influenza.*
1. Headache, invariably of frontal type with severe pain behind the eyes, especially on movement.	1. Headache, generally frontal, but variable. Post-orbital pain present, but not such a constant or prominent feature.
2. Almost invariable suffusion of conjunctivæ and appearance as of "the morning after."	2. Suffusion of conjunctivæ not often present.
3. A quite distinctive and invariable *white* fur on the tongue, which is *not* tremulous except possibly from other causes.	3. A brown or dirty grey fur on the tongue, which is practically always tremulous at some time during the course of the disease.
4. *Temperature:* Always high at the outset—generally 102°–105° F. Patient nearly always exhibits marks of sandfly bites.	4. *Temperature:* Rarely over 103° and generally about 101°–102° at the outset and often lower. May never exhibit signs of bites.
5. *Pulse:* Invariably slow in proportion to the temperature and rarely more than 100 even with the highest temperature.	5. *Pulse:* Also slow, but not in such marked degree as in phlebotomus fever.
6. *Temper:* Very irritable, especially during convalescence.	6. *Temper:* Not specially irritable.
7. *Appetite:* Almost complete anorexia is characteristic.	7. *Appetite:* Very poor, but not lost.
8. *Pains:* In back and lower limbs.	8. *Pains:* All over, but especially in small of back.

To sum up: Phlebotomus fever can be diagnosed at sight, especially in districts where the phlebotomus fly is known to abound, by the two or three most prominent symptoms—viz., blear-eyed appearance of the patient, flushed face, *white* fur on the tongue, and slow pulse with high temperature. No tremor of the tongue. It may be noted that with only three or four exceptions all cases of phlebotomus fever have occurred in men living ashore, the exceptions being in men who were borne in ships anchored close to the beach and undoubtedly infected by sandflies blown off from the beach,

which is known to be possible as sandflies have been found on board these ships though not on others further removed from the shore. Very numerous cases of "Spanish" influenza (in one large ship over 600 cases) have occurred in ships anchored far away from the beach and not accessible to sandflies, though subject to infection by those previously infected or already sickening for the disease known as Spanish influenza.

Phlebótomus fever is, in my experience, decidedly not an infectious disease in the ordinary sense—but only through the agency of sandflies. "Spanish" influenza is, in my experience, certainly an infectious disease, and the spread of infected can be diminished to a very large extent by careful antiseptic treatment of the mouth and naso-pharynx of those already infected, or likely to be infected during the course of an epidemic such as we have recently experienced.

I am, Sir, yours faithfully,

W. BASTIAN,
Surgeon Commander, R.N.

Oct. 12th, 1918.

RICKETS AND HOUSE INFECTION.

To the Editor of THE LANCET.

SIR,—In the Report recently published by the Medical Research Committee "of an inquiry into the social and economic factors in the causation of rickets" it is stated that while we are still ignorant of the cause of rickets, the evidence at our disposal gives little support to the idea that rickets is due to dietetic error. Rather the report lays emphasis upon the connexion of the disease with the factors of overcrowding, want of air and sunshine, and lack of exercise. To me it seems that not sufficient attention has been paid to the manner in which these prejudicial influences act, whether directly upon the nutrition of the child, or indirectly by lowering his immunity against infection, and so multiplying the incidence of transient pyrexial processes of all sorts. It is the object of this letter to suggest that this latter factor, which finds no place in this careful and elaborate report, is of too great importance to be excluded from such a discussion.

No one who comes much in contact with the children of the poor can be in doubt as to the frequency of catarrhal infections of the respiratory tract. Of many of these children in the first year of life it may be said that no single month passes without one or more bouts of pyrexia from this cause accompanied by severe loss of weight and a great diminution of vigour and activity. Crowded together, overfed or unsuitably fed, shut off from sun and air, the children fall a ready prey to such infections, and react with symptoms the severity of which is immeasurably greater than in the sturdy child whose hygiene is not at fault.

The effect upon the child of repeated catarrhal infections.—The loss of weight in such cases may be both great and rapid. Not infrequently within a day or two it may amount to as much as 1/10 of the body weight, a loss which can only be accounted for by an increased excretion of salts and water from the body. The prejudicial effect of such fluctuations upon the cells composing the different tissues of the body may be seen in various ways. For example, in the healthy child the physiological stimulus of the erupting tooth is by no means sufficient to provoke an inflammatory reaction in the surrounding cells of the gum, and the cutting of the tooth proceeds without symptoms of discomfort. If, however, the vitality of these cells is lowered by coincident catarrhal infection of the bowel or of the bronchi, the erupting tooth may be surrounded by a painful areola of inflamed gum. As the mothers tell us, such a child "cuts his teeth with bronchitis or with diarrhœa." In reality it is the coincident bronchitis or enteritis which has increased the vulnerability of the cells composing the gum.

We see the same excessive local reaction in children suffering from catarrhal infections in the little fissures which appear at the corners of the mouth from contact with the tongue, which the French call *perlèche*, or in the painful irritation in the skin of the prepuce where it comes in contact with the urine, or in the napkin dermatitis produced by contact with stools not in themselves highly or unusually irritating. In all such cases the extent of the local reaction is in a sense an index of the diminished vitality and increased vulnerability of the cellular elements of the part. With recovery from the infection and with renewed growth and vigour of the child we can confidently predict a rapid improvement in the local disturbance.

It is not only in these superficial and visible parts of the body that it is possible to detect a rapid deterioration in the vitality of the constituent cells as a consequence of a persistent infective process elsewhere. In structures more deeply situated we can also note the ill-effect. In the muscles we find a rapid wasting and loss of tone. A child of two years, who suffered from a severe nasal catarrh sufficient to cause moderate pyrexia for four days, was unable thereafter to climb a little steep grassy bank, which before had presented no difficulties to him, until the end of the fourth week after his illness. With repeated catarrhal infections the want of tone and flabbiness of the muscles become persistent.

The vaso-motor system also provides evidence. Excessive perspiration, coldness and blueness of the extremities, and undue pallor of the skin persist long after repeated or continued pyrexial infection. The appearance of pallor is due to this vaso-motor instability rather than to a true anæmia. The children flush readily during crying or upon exertion, but without this stimulus the skin of the face is apt to be pale and bloodless.

The prejudicial effects upon the nervous system are shown by the tendency to convulsions, laryngismus, tetany, and so forth, as well as by the loss of coördination in movement or the exhaustion shown in the immobility of the child. Some of these children, exhausted by repeated catarrhal infections, will remain motionless and set in any unnatural posture in which we have placed them for many minutes at a time, a condition which recalls the katatonia of dementia præcox.

In the various ductless glands we find, also, a diminished activity. A long-continued succession of pyrexial infections is apt to leave a child infantile in body and mind, so that sometimes the suggestion of hypothyroidism is apt to occur to us.

The enamel organ of the teeth provides a good example of the ill-effect of pyrexial disorders. Let the child pass through the first two years of life free from repeated catarrhal infection, and it will cut teeth covered everywhere with flawless enamel. But if the activity of the enamel organ is from time to time inhibited by acute infective processes the teeth, when they come, will bear upon them the marks of the vicissitudes through which they have passed in the shape of the so-called circular caries.

Lastly, one may instance the well-known transverse ridges on the nails, following devitalisation of the matrix of the nail by pyrexial processes—markings which are very frequently seen in young children.

The effect of catarrhal infection upon ossification.—If it be granted that the effect of repeated pyrexial infection upon cutaneous, muscular, and nervous tissues is as described, it would be strange if skeletal tissues were to be excluded. The activity of the osteoblasts also is inhibited by repeated pyrexial illness. The close association of catarrhal processes of all sorts with the rickety state has not, of course, escaped attention, but it has been usual to represent the tendency to catarrhs as the result of rickets, and thus to deprive it of etiological significance. As the present report reminds us, we owe the earliest accurate description of rickets to Glisson. Nor is it surprising that in this disease of domestication, this perversion of growth due to want of sun and air, lack of exercise, and faulty feeding, it should be the changes in the rigid skeleton which should first catch the eye of the early observer. The prominence first conceded by Glisson to the skeletal changes has been maintained by all subsequent writers.

That the environmental faults incriminated may directly and of themselves produce sufficient interference with nutrition to provoke all the symptoms of defective cellular activity both in the bones and in other tissues I do not deny. It is even likely that any one such fault, if it be sufficiently concentrated, may at times and in experiments upon animals be itself capable of producing rickets. In general, however, I believe that these factors act as predisposing causes by lowering the immunity against infection, and that it is in consequence of the infection that the rickety process develops.

The age incidence of rickets.—To this view of the importance of infection of the child in the production of rickets an objection may be made that the incidence of catarrhal

infections extends all through childhood, while rickets is common only within certain well-defined age limits. In childhood, however, we recognise certain well-marked stages of development. In the first few months of life it is the digestive function which is so hypertrophied that it attracts all attention to itself, so that infections of all sorts, as, for instance, the common infectious cold which sometimes passes through a whole household, are apt to take on themselves the appearance of primary alimentary disorders. Later locomotion and the increased activity of the bone-forming elements which takes place under the stimulus of walking become in turn prominent. How great is the change in the skeleton which the assumption of the upright posture and the stimulus of walking produce. The legs, which up to that time have been active, if somewhat inefficient, prehensile organs, become modified into organs of support. The pelvis and the chest undergo a rapid expansion, the abdomen relatively recedes, and the curves of the spine are altered. If, however, as a result of repeated or persistent infection the motor activities of brain, nerve, and muscle are inhibited, this moulding of the skeleton is delayed and in bad cases prevented. This period of high functional activity and the period of the increased liability to rickets correspond. Within this age limit a high proportion of infected children develops some signs of rickets. That many escape is to be expected. Similarly, the syphilitic toxin, which in general shows the same affinity for the epiphyses, is often content to leave the bony system unaffected.

Calcium metabolism in rickets.—That pyrexial disturbances in infancy and childhood are accompanied by profound alterations in the retention and excretion of salts is shown by the great and sudden fluctuations in the body weight. In certain children convulsions and tetany, accompanied often by œdema of the extremities, are almost invariable accompaniments of a pyrexial attack, and it is significant that a very large proportion of children with tetany are also rickety.

Experiments upon calcium metabolism in rickets have given very contradictory results. In most cases the research period has been as short as three or four days, and it is clear that in a disorder of such long duration as rickets little information of value can be obtained from the mere presence or absence of a negative calcium balance in that short period. I know of no work which has been undertaken to estimate the calcium balance of rickety children suffering from pyrexia. On the general question, however, of the calcium metabolism during pyrexia, it would appear that excretion may be increased.

Rival views of the origin of rickets.—There is at the present time some tendency for a sharp difference of opinion to arise as to the cause of rickets. There are those who hold that the disorder is a "diet deficiency" disease; there are others who will have none of this view, and regard it as a disease of "domestication or urbanisation." Dr. Leonard Findlay has shown the ill-effect of confinement and lack of exercise in puppies. Dr. Eric Pritchard has emphasised the evils of over-feeding. The cause has even been found in hypothyroidism, and the thyroid as well as other ductless glands have been implicated. If rickets be no more than the temporary inhibition of osteoblastic activity during infective processes of all sorts, upsetting the balance which maintains in health between osteoblast and osteoclast, if the softening of the bones is comparable to the accompanying amyotonia, to the devitalisation of the skin and mucous membranes, to the irritation and exhaustion of nervous tissue, and to the diminished activity of ductless glands, then we can accept all of these rival claims as playing a part in lowering the immunity of the child against infection. The child who is fed upon an excess of carbohydrate food, the child who is kept away from fresh air and sun and who has no opportunity for free movement, and who is in close contact with infected persons is prone to frequent if transient infection. In our study of such a disorder as rickets we must not omit to keep the child himself in the foreground. We must attempt to isolate and weigh the effects even of such *imponderabilia* as the common and frequently repeated household cold. An analysis of the symptoms ordinarily attributed to rickets such as is presented in the report by Dr. Findlay is historically interesting, and a survey of the social and economic factors such as Miss Ferguson contributes is of the very highest practical utility. It is, however, the reaction of the child to the evils which she discloses which demands closer study. If from such a study we are able to shift our ground a little and regard as the factor of chief etiological significance not the refusal of the osteoid tissue to undergo ossification, but the lowering of immunity and the repetition of catarrhal infections of the respiratory and alimentary tracts, then we shall have less reason to dispute as to the importance of rival "causes of rickets." For all will then be recognised as important and we shall have an explanation in keeping with the coincident changes in other tissues of the body, changes which are clearly the result and not the cause of the state of infection.

I am, Sir, yours faithfully,

Devonshire-place, W., Nov. 2nd, 1918. H. CHARLES CAMERON.

ACCESSORY FOOD FACTORS IN INFANT FEEDING.

To the Editor of THE LANCET.

SIR,—In his extremely interesting contribution to THE LANCET of Oct. 12th on the subject of infant feeding Dr. J. C. Drummond refers to the use of Marylebone cream in combination with separated dried milk as a food for babies, and states that he would expect to find that children fed on such a mixture would show diminished resistance to disease in spite of apparent normal development. As I have had some five or six years' experience of feeding infants at my centre in accordance with this method, my experience may not be without interest.

I have not had much experience with the use of ordinary Marylebone cream (made with linseed oil) in combination with dried separated milk, because after a short trial I gave it up for the very reasons predicted by Dr. Drummond, but I have had some experience of "modified" Marylebone cream, used with separated milk, and the results have been excellent. "Modified" Marylebone cream is made from soya-bean oil; cotton-seed oil and suet in such proportions that the resulting combination contains approximately the same percentage of the neutral fats, olein palmatin, and stearin as butter fat contains. I thoroughly endorse Dr. Drummond's view that the real criterion of good nutrition is resistance to disease. Judged on this ground, I find that infants fed on dried separated milk modified to the standard of breast-milk with sugar and Marylebone cream of the above variety compare not unfavourably with artificially fed infants reared on other dietaries, in spite of the fact they are drawn from the poorest class of infants attending at the consultations. I may add, however, that these infants, in common with all other hand-fed infants attending at my centre, are invariably provided with three other accessory food elements—namely, with the "water-soluble C" element by giving fruit-juice or turnip-juice, with the "water-soluble B" element by giving daily 1 oz. of meat and vegetable broth, and with lecithin bodies by giving daily either a small quantity of the yelk of egg or a few grains of glycerophosphate of calcium, which seems to answer the same purpose in lending stability to the nerve cell.

I have been using dried milks of all kinds during the last ten years for infant feeding, at first without the addition of these accessory factors and for the last five years in combination with them; the results are, in my opinion, astonishingly better when the accessory factors are added.

I am, Sir, yours faithfully,

Harley-street, W., Nov. 1st, 1918. ERIC PRITCHARD.

NASAL DISINFECTION.

To the Editor of THE LANCET.

SIR,—There is a large group of infectious diseases in which the infective organisms live and apparently multiply in the naso-pharynx and the accessory sinuses. Typical instances of these diseases are scarlet fever, diphtheria, and cerebro-spinal fever. The organisms are found sometimes in patients who have suffered from the disease, sometimes in healthy carriers. They often persist for a long time, are difficult to destroy, and are a frequent cause of spread of infection, especially when a nasal discharge occurs. My own experience has been almost entirely in connexion with scarlet fever and diphtheria as treated in hospital, and in these diseases the difficulty of getting rid of infection is notorious. Antiseptics, applied by spraying, syringing, inhalation, or otherwise, have all failed, and it almost

seemed as if the best that could be done was to put the patient under the healthiest possible conditions and rely on fresh air and ordinary hygienic measures, in the hope that in time the organisms would die out. Usually they did so, but sometimes the naso-pharynx seemed to act as an incubator and the organisms continued to multiply, while sometimes, after almost disappearing, they seemed to take on a new lease of life, possibly under the influence of some morbid condition of the mucous membrane.

The main difficulty in treatment is that the naso-pharynx and its accessory sinuses form such an intricate series of chambers that it is impossible to cleanse them from the outside; and to obtain complete success every part must be reached. This being the case, it occurred to me that the correct line of treatment would be to imitate the natural method and try to wash out all the passages from the inside by causing increased secretion; and some years ago I began to employ menthol inhalation. A solution of menthol ℥i. in ℥viii. of spirit, with a few drops of eucalyptus oil, was used, one or two drachms of this being added to a pint of very hot water in a jug. The patient held his head, covered by a towel, over this mixture for some minutes and sniffed vigorously, inhaling the somewhat irritating vapour, and so causing a free discharge from the nose. The procedure was repeated from three to six times daily. It is not particularly pleasant, but children usually submit to it readily enough if coaxed. It is essential to success that there should be a free discharge of mucus, and this may be assisted by blowing the nose.

The results of this simple method of treatment, if properly tried and persevered with, are, in my opinion, very satisfactory and superior to other methods for getting rid of organisms. They are most easily studied in the case of nasal diphtheria, as here the organisms are distinctive and readily recognised. In this disease I have repeatedly seen the menthol treatment cause a disappearance of the bacilli in old-standing cases. Not infrequently it happens that before disappearing the bacilli alter in character. They lose their beading, become shorter, and assume the characters of the Hofmann type. A drawback to the treatment is that if the patient is a young child he must be carefully looked after during the inhalation, otherwise he might scald himself, and it might be feasible to make use of an inhaling room similar to that employed in the Army for the administration of antiseptics to carriers of the meningococcus.

As regards the prophylactic value of the treatment I have no experience, but it is not unreasonable to expect benefit from a treatment which tends to produce bacteriological cleanliness of the nasal passages. During a time of epidemic prevalence of such diseases as influenza or after definite exposure to infection it might be of service to supplement the ordinary toilet of the teeth and mouth with a menthol toilet of the nose. Numerous organisms are inhaled through the nose and many remain for some time lodged on the surface of the mucous membrane. It is quite possible that disease might be prevented by washing away these organisms before they have time to cause mischief. Gargling, too, may be useful, especially in the case of mouth-breathers. But, surely, if breathing is carried on in the proper way through the nose and if organisms are entering with the inspired air it is a little illogical to employ a gargle for the throat, while the cleansing of the nose is ignored.

I am, Sir, yours faithfully,

F. J. WOOLLACOTT, M.D. Oxon., D.P.H.

Hampden-street, N.W., Oct. 26th, 1918.

THE BENEFITS OF "NASAL DRILL."

To the Editor of THE LANCET.

SIR,—I wish to give my rather belated support to Dr. Isabel Ormiston's article in your issue of August 24th describing a new method in the treatment and prevention of adenoids. Dr. William Ewart and Dr. Leonard Williams have in subsequent letters indicated wider aspects of this simple and physiological "nasal drill." The unnatural structural changes which would follow from a damming-back of nasal and pharyngeal secretion seem to be the explanatory groundwork of vegetations, polypi, atrophic change, and tonsillar hypertrophy. When the function of mucous glands is in abeyance, and to this are added deviations and spurs of the nasal septum due to trauma or other causes, it is not difficult to understand why the turbinal bones should become diseased, why the complicated processes of the ethmoid should tend to sepsis, why the entrance to the antrum should become occluded, and why atrophic rhinitis and disease of the nasal septum should arise. If we superadd to all this an unsuitable environment and a social custom which decrees that the nose shall be blown in a quiet and decorous fashion, we can comprehend the chief amongst the causes of diseases of the nose and naso-pharynx.

I have had the privilege of watching patients treated by Mrs. E. Hancock's novel but natural method, and have noticed particularly the prompt disappearance of those symptoms which appear latest in cases of nasal and naso-pharyngeal catarrhal obstruction. When the treatment is continued and the drainage of mucus from the nose and naso-pharynx continues for weeks, the improvement in general health and psychical well-being becomes gradually apparent.

Following the simple technique described in Dr. Ormiston's letter, I experimented for two months while at a base hospital in France and cite the two following cases:—

M. A., aged 31 years, had chronic atrophic rhinitis of about six months' duration. The case was a favourable one, as it was in an early stage. Examination showed that the nasal septum was perforated from side to side, apparently by trauma—a small nail thrust into the nose in childhood. The nasal cavity was over-ventilated, the nostrils were widened, the mucosa being dry and atrophic. Crusts had formed over certain areas and there was some ozæna. Patient admitted that he used his handkerchief rarely and always ineffectively and that he had not sneezed for a long time. Treatment over several weeks restored temporarily the sneezing habit and induced a copious flow of mucus. The ozæna disappeared early, the crusts gradually disintegrated, and the nasal mucosa became moister and healthier. After three months' interrupted treatment the crusts had completely disappeared and the general health of the patient was much improved.

In this instance there was at first a light conjunctivitis of the eyes, an icteric tinge of the sclerotic, and a considerable error of refraction. The conjunctivitis and the icterus disappeared, and the patient stated that his eyes were distinctly benefited by the restoration of nasal function. He is now, after two years, permanently free from any signs of atrophic rhinitis. The error of refraction, of course, remains unaffected.

F. B., aged 23 years, had two small polypi visible as stalked processes between the middle and inferior turbinal bones of the left side. Adenoid vegetations were also present. Headaches, "stuffiness," retention of discharge and overflow of mucus into the pharynx, broken sleep, and a "constant cold" were the complaints of the patient. An enormous amount of mucus was drained from the nose and naso-pharynx by treatment at intervals over a period of six weeks. The polypi gradually decreased in size until they had disappeared. Headaches, "stuffiness," and sleeplessness were abolished after a week.

It is very gratifying to know that "nasal drill" has become an accomplished fact in at least one children's school in London and that Mrs. Hancock's method is growing in popularity.

I am, Sir, yours faithfully,

A. L. MCLEAN, M.D.,
Captain, A.A.M.C.

Oct. 23rd, 1918.

NOTIFICATION OF INDIGENOUS MALARIA.

To the Editor of THE LANCET.

SIR,—I may be an optimist, but judging by previous experience I think it is extremely unlikely that malaria will cause much trouble in England when the war ceases. Practically everybody who spends any time in the tropics gets malaria some time or other, and for very many years we have had thousands of men coming back to live either in barracks or else in fairly crowded civil habitations all over the British Isles. Anopheline mosquitoes can be found in many places, and yet cases of indigenous malaria have apparently been extremely rare, and I have never heard of more than one case reported in the same place and year.

Recently a case occurred in my Division in France, but here the line from May to the end of August was in the midst of water channels where thousands of mosquitoes were being bred. I did not think it worth while to recommend any preventive measures, and this was justified, as no further cases occurred. For any serious spread of this disease a large number of infected men and mosquitoes is required, and probably also a continuous spell of really hot weather such as is extremely rare in England. Although malaria is well known to recur in some cases for several years, in the vast majority recurrences are comparatively rare after a few months' residence in a temperate climate; and it may be remembered that when Ross was carrying out his researches his infected birds lost their parasites when he moved from the plains to the more genial climate of the hills.

Should cases of indigenous malaria ever become more prevalent I think they should be notified, as medical men

without tropical experience are naturally not inclined to take the disease into consideration when a diagnosis is being made; and proper treatment is likely to be delayed, especially as the parasite may not be found on first examination. On getting fever some years ago in India—chiefly out of curiosity to get a correct diagnosis—I determined not to take quinine until I had found the parasite; and this I did not succeed in doing until the third onset had occurred. Similarly, I remember seeing an "interesting" case of pyrexia in an Indian hospital in which malaria was excluded as parasites had not been found on first examination. Pyrexia had lasted several days, but when I suggested re-examination of the blood numerous parasites were found, and all signs and symptoms cleared up at once on administration of quinine.—I am, Sirs, yours faithfully,

N. FAICHNIE.

Lieut.-Col. (temp. Col.), A.D.M.S., "X" Division.
B.E.F., France, Oct. 22nd, 1918.

ADDITIONAL FUEL IN CHILDBIRTH.

To the Editor of THE LANCET.

SIR,—I beg to enclose herewith a copy of a letter received from the Controller of Coal Mines, to which I hope you will be able to give publicity.—I am, Sir, yours faithfully,

J. HALFORD,
Secretary, National League for Health, Maternity and Child Welfare, including the National League for Physical Education and Improvement.
4, Tavistock-square, London, W.C. 1, Oct. 29th, 1918.

[ENCLOSURE.]

Board of Trade, Coal Mines Department: Household Fuel and Lighting Branch.

Holborn Viaduct Hotel, London, E.C. 1, Oct. 11th, 1918.

Subject—Additional Allowance under the Household Fuel and Lighting Order, 1918.

DEAR MADAM,—Replying to your letter of the 9th October, I am directed to say that a claim could certainly be submitted for an additional allowance on the ground of illness in the case of childbirth, and would be allowed for a reasonable period thereafter. The maximum quantity of fuel that may be granted on such a claim is five tons, but it is felt that the decision as to the actual quantity that would be granted must depend on the circumstances of the particular case.

I am, yours faithfully,
W. H. GAUNT,
For the Controller of Coal Mines.

Miss Halford, Secretary, 4, Tavistock-square, W.C. 1.

A CASE OF ABSENCE OF SENSATION.

To the Editor of THE LANCET.

SIR,—I was greatly interested in Captain E. D. Roberts's paper in your issue of Oct. 19th on a case of absence of all sensation, and in your annotation on the same subject in the same issue. Since the subject of this paper left Aldershot Military Isolation Hospital he has been in two of our Canadian hospitals, and is still an inmate, and I have had an opportunity of studying his case. In the main Captain Roberts's very clear description of the condition of the patient still holds good, but there are several changes both in the history of the case as given by the man himself and in his present condition, and these changes in themselves throw a certain amount of light on the diagnosis.

The patient was admitted to our hospitals under a diagnosis of I.C.T. (inflammation connective tissues), and his forearms show many scars and scabs where he himself or interested friends have burnt the skin with lighted cigarettes in order to test his sense of pain. Contrary to what Captain Roberts found, the man assures me that he was quite well until he had yellow fever at the age of 17 (i.e., 20 years ago), and that he has been in the present state ever since. Captain Roberts laid some stress on the fact that the patient could swim well, but he tells me that he never could swim a stroke and always "sank like a stone" when he tried to do so; so evidently he tells a different tale at different times. The senses of pain, touch, heat and cold, taste and smell, appear to be quite absent everywhere, but, strange to say, the man is very fond of smoking. He told me that this morning he ate a very bad egg for breakfast and "did not mind"; he seemed, indeed, very proud of the fact.

As regards absence of muscular sense, I have some doubt. If the patient be blindfolded and laid flat on his back on the ground and then be told to rise he does not move, and says that he cannot do so unless he can see, but when he is passively raised into a vertical position he stands steadily, and if given a push maintains his equilibrium, which suggests the presence of muscular sense. We could not get him to walk blindfolded. Again, as regards the sense of weight. If a light object, such as an empty match-box, be placed in one extended hand, and a heavier one, such as an empty glass ink-pot, in the other, the patient says that he cannot feel them there, let alone say which is the heavier. If now either object be pressed downwards to the extent of many pounds pressure, he can be felt to resist violently, which suggests a conscious or subconscious knowledge of the increased weight with consequent resistance, and yet he says that he does not know which is the heavier. He does not seem to have the sense of position of his limbs. When the eyes are closed and when the arms or legs are placed in elevated positions they now at once fall, and there is no suggestion of catalepsy. When told to keep his eyes closed there is constant blepharo-spasm, which is suggestive.

This man has been a show case at many hospitals in America and France for many years, and has apparently become quite fixed in his ideas. From the fact that the senses of touch, smell, and taste are absent, as well as those of pain and heat and cold, we can probably rule out syringomyelia. The anæsthesia is not dissociated. In syringomyelia the senses of pain and of heat and cold are usually the only ones involved, and, moreover, generally this is over only certain areas. In this case the whole body is implicated. Again, in syringomyelia there is usually some spasticity of the legs, with trophic disturbances of the skin, muscles, or joints, and not infrequently some muscular atrophy. All these are absent here.

To my mind the case is one of pure hysteria. It is, nevertheless, of great interest on account of its profound nature and long duration, and Captain Roberts did well to put it on record. The patient tells me that he has had two brothers killed already in the French Army, but I fancy that the chances of his being of much good as a soldier are small. He is too interesting a case!

I am, Sir, yours faithfully,
R. D. RUDOLF,
Colonel, Consulting Physician, Canadian Forces in England.
Oct. 24th, 1918.

MEDICAL RECONSTRUCTION.

To the Editor of THE LANCET.

SIR,—On two points of Sir W. Watson Cheyne's letter in THE LANCET of Oct. 12th I feel constrained to trouble you. He writes about those civilians whose practices have disappeared during service in the Army. Surely a number of those practices have disappeared because of, not in spite of, the services of their neighbours and should therefore be capable of replacement. I have in mind particularly the case of the elderly (territorial and temporary commissioned) officers with families who have had to give up all practice on account of the war, and whose practices have "disappeared." Is it not "up to" the profession to see that they are reinstated completely? Can no pressure be brought to bear upon the persons who have filched their means of livelihood to restore it either in money or kind? I know this cannot be done by means of the law, but is there no other means of bringing these people to book, or do the B.M.A. shirk the work because it is unpleasant?

Would it not be better to raise a fund to set these men on their feet again without any question of repayment rather than to insult them by offering to lend them money (a bank can do that) in order that they may themselves repair the injury caused by the Hun and their fellow practitioners?

This matter does not affect me personally, either as "robber" or "robbed"; but I do feel that for the honour of our profession something should be done, and done quickly, and any fund raised (not for loans but for restitution) will receive my mite at once.

I am, Sir, yours faithfully,
R.A.M.C. (T.C.)
Oct. 12th, 1918.

To the Editor of THE LANCET.

SIR,—There is a considerable amount of correspondence at present on the future of the medical profession. Some eminent men have given their ideas as to what should be its future. It does not appear to have occurred to any of the members of the profession at home that there is a considerable number of doctors now serving in the Navy and Army, or that these men will one day, if they survive, return to civil life. Many of them left their practices at the beginning of the war. These practices have been absorbed by those that remained. It is natural that those who have been making a great deal of money during the war, and hope to continue to do so, should desire that the present conditions of medical practice should continue, and that a State

Medical Service should not come into being. Under such a scheme they stand to lose money.

But what about the men who have lost all owing to their patriotism, and have nothing to return to? Some of us will have been away for five or six years. I have served in several theatres of war, and have not met a medical officer who is not in favour of a State service.

Surely the opinion of the more patriotic part of the profession and their interests are deserving of some consideration? The best are abroad and likely to remain there for some time to come. When they return there should be Government billets ready for them, and they should not have to compete with the men who have taken their practices from them.—I am, Sir, yours faithfully,

Sept. 25th, 1918. LIEUTENANT-COLONEL, R.A.M.C. (T.F.)

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

To be temporary Surgeon-Lieutenants: J. H. E. Ewen, C. C. R. Downing, G. Millar, F. P. N. Parsons, W. L. Berry.

ARMY MEDICAL SERVICE.

Col. J. M. F. Shine is placed on retired pay.

Lieut.-Col. (temp. Col.) G. W. Tate, from R.A.M.C., to be Colonel.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. G. M. Goldsmith to be acting Colonel whilst employed as Assistant Director of Medical Services of a Division.

Temp. Major A. M. Leake, V.C., relinquishes the acting rank of Lieutenant-Colonel on re-posting.

Majors to be acting Lieutenant-Colonels: R. W. D. Leslie (whilst employed as Assistant Director of Medical Services), A. H. McN. Mitchell (whilst in command of a Medical Unit).

Temp. Major A. F. Hurst to be acting Lieutenant-Colonel whilst specially employed.

Capt. (temp. Major) R. Hemphill to be acting Lieutenant-Colonel whilst in command of a Field Ambulance.

Temp. Capt. F. G. W. Deane to be acting Lieutenant-Colonel whilst specially employed.

Temporary Captains to be acting Majors whilst specially employed: A. Dingwall-Fordyce, C. H. Fennell, R. Milne, W. N. Parker, N. C. Lake, W. S. McGowan, D. I. Anderson, T. Russell.

A. S. Morison to be temporary Major whilst employed at Sunderland War Hospital.

Temp. Capt. D. P. Hanington, Canadian Army Medical Corps, to be acting Major while employed as Registrar, Canadian General Hospital.

The undermentioned relinquish the acting rank of Major on re-posting: Capts. G. O. Chambers, J. Y. Moore; Temp. Capts. A. K. Cosgrove, H. H. White, C. C. Court, D. I. Anderson.

To be acting Majors: Capts. H. G. Trayer, J. R. Lloyd, R. E. Gibson, C. R. Dudgeon; Temp. Capts. J. L. A. Grout, J. Jack, C. F. Knight, A. W. Dennis, R. Warren, F. Henderson, A. M. Crawford, W. Anderson.

Lieutenants (temporary Captains) to be Captains: R. D. Davy, R. L. Ritchie, R. B. Myles, E. S. Cuthbert.

F. M. Murray and H. C. Smyth (late temporary Captains) are granted the honorary rank of Captain.

Temporary Lieutenants to be temporary Captains: W. Fletcher-Barrett, W. B. Dove, W. V. Naish, B. R. Vickers, J. A. C. Smith.

Temp. Lieuts. H. J. Starling and J. R. Hewetson to be temporary Captains.

Temp. Hon. Lieut. S. R. Meaker to be temporary honorary Captain.

Officers relinquishing their commissions: Temp. Hon. Maj. W. P. S. Branson, on ceasing to be employed with No. 1 Red Cross (Duchess of Westminster's) Hospital; Temp. Capts. E. S. Hall, J. H. Wilks, W. Lumley, B. Lyons, J. G. Milne, R. G. Abercrombie, T. E. Mulvaney, A. N. Collier (on account of ill-health), S. J. McC. Bradshaw, J. Brown, A. W. Brodribb, F. W. Stone, C. L. McDonagh, C. T. Galbraith, E. C. Arnold, W. F. Moore; Temp. Hon. Capts. (on ceasing to serve with No. 22 General Hospital) E. D. Busby, G. W. Cottis; Temp. Lieuts. L. G. Allan, B. Blackwood, G. E. J. Greene, P. Liston; Temp. Hon. Lieuts. (on ceasing to be employed with No. 22 General Hospital) W. M. Findley, J. S. Bloomer.

GENERAL RESERVE OF OFFICERS.

Major H. S. Peeke relinquishes the acting rank of Lieutenant-Colonel on ceasing duty with No. 1 British Red Cross (Duchess of Westminster's) Hospital.

SPECIAL RESERVE OF OFFICERS.

Capts. H. M. Williams and A. J. Clark relinquish the acting rank of Major on re-posting.

Capt. G. K. Anorey, from temporary retired pay, relinquishes his commission on account of ill-health contracted on active service, and is granted the honorary rank of Captain.

Captains to be acting Majors: R. Mackinnon, J. A. Ryle, P. J. Gaffikin.

Lieutenants to be Captains: W. L. Yell, J. B. D. Galbraith, I. M. Robertson, T. R. Wilson, J. P. White, J. Macleod, A. Riddell, J. J. A. Scott, F. J. Harvey, D. J. Valentine, S. H. de G. Pritchard, F. W. A. Watt, W. M. Jones, A. G. F. McArthur, S. W. Page, L. K. Ledger, M. Edwards, A. McL. Pickup, O. C. Carter, W. U. Longford, M. J. Hilton, C. S. Baxter, W. S. Stansfield.

To be Lieutenants: J. Lipsey (from Glasgow University Contingent, O.T.C.), L. J. Schwartz (from University of Manchester Contingent, O.T.C.), M. Melvin (from Edinburgh University Contingent, O.T.C.), T. McS. Wilson, W. M. Savery (from University of London Contingent, O.T.C.).

TERRITORIAL FORCE.

To be acting Colonels while employed as Assistant Directors of Medical Services: Lieut.-Cols. C. T. Green, R. V. Gostling, A. M. McIntosh, C. H. Howkins, H. Collinson, J. Mackinnon, F. Kelly, W. R. Matthews, E. C. Montgomery-Smith, E. A. Wraith, R. Pickard, and J. Clay; Majors T. Kay, D. Rorie, H. Richardson, and C. H. Lindsay.

To be acting Lieutenant-Colonels while specially employed: Majors A. C. Goodwin, A. W. Moore, A. E. Kidd, J. Wood, R. Coffey, J. W. Bird, J. Gray, F. Whalley, T. Donovan, H. T. Samuel, J. Evans, T. P. Puddicombe, A. P. Swanson, and E. B. Bird (Brevet Lieut.-Col.); Capts. A. T. Falwasser, G. T. Willan, H. G. G. Mackenzie, J. Barkley, J. Bruce, J. Young, T. A. Green, and C. W. Eames.

To be acting Majors while specially employed: Capts. J. W. McIntosh, T. G. Buchanan, H. G. Magroth, R. Waternouse, R. Phillips, J. Turtle, J. D. Fiddes, J. F. MacIntosh, T. H. Peyton, W. D. Sturrock, O. H. Williams, E. Knight, E. L. Rowse, W. C. Macaulay, A. C. F. Turner, A. A. Hingston, H. B. Sproat, H. J. Dunbar, G. P. D. Hawker, R. Eager, H. C. Adams, F. E. Stokes, J. W. Kemp, H. W. Bayly, A. Leggat, L. P. Harris, S. F. S. J. Steadman, J. Chalmers, S. English, E. L. D. Dewiney, E. W. Matthews, H. F. W. Boeddicker, R. O. Sibley, J. H. Wood, W. F. Corfield, A. S. M. Macgregor, R. Proudfoot, A. B. Sloan.

Lieut.-Col. E. J. Lawless, from T.F. Res., to be Lieutenant-Colonel.

Lieut.-Col. E. M. Callender, from General Hospital, to be Lieutenant-Colonel.

Lieut.-Cols. J. B. Butler, W. J. Jones, A. R. Maggy, and F. W. Hearn are retired, having attained the age limit, with permission to retain their rank and to wear the prescribed uniform.

Lieut.-Col. P. Mitchell is restored to the establishment.

Major (Brevet Lieut.-Col.) (temp. Lieut.-Col.) J. Smart relinquishes his temporary rank on ceasing to command a General Hospital.

Major (acting Lieut.-Col.) R. T. Hughes and Capts. (acting Majors) R. Proudfoot and F. R. Humphreys relinquish their acting rank on ceasing to be specially employed.

Major R. Griffith, Capt. (acting Major) W. D. Sturrock, and Capt. P. Moxey to be acting Lieutenant-Colonels whilst commanding a Field Ambulance.

Capt. (acting Major) R. S. Taylor, D.S.O., is granted precedence in his acting rank.

Capt. A. McGillivray to be Major.

Capt. J. E. Adams is seconded for service overseas.

Capt. (temp. Major) D. W. E. Jones is seconded whilst holding a temporary commission in the Army Medical Service.

Major (temp. Lieut.-Col.) J. M. G. Bremner relinquishes his temporary rank on ceasing to command a Field Ambulance.

Capt. (acting Lieut.-Col.) D. H. Weir to be Major and to retain acting rank of Lieutenant-Colonel.

Capt. T. Porter relinquishes his commission on account of ill-health and is granted the honorary rank of Captain.

Temporary Captains to be Captains: W. Fitzpatrick, J. Muir, W. H. Broad, R. R. Macnicol, G. Moore, C. E. Whitehead, J. H. Jones, F. Ward, J. S. Hudson, H. M. S. Turner, C. S. Young, H. G. L. Allford, E. A. C. Fazan, C. C. Lavington, J. A. Mathers, A. G. Hendley, H. W. Bayly, R. Verel, H. Wade, A. Mowat, R. W. C. Macdonald, L. Colledge, G. H. Hunt, A. W. Nuthall, H. C. Adams, and J. Cook.

General List.—Capts. A. G. Hebblethwaite and O. W. D. Steel to be acting Lieutenant-Colonels whilst commanding a Field Ambulance.

Captains to be acting Majors whilst specially employed: H. R. Dive, P. S. Marsin, T. W. H. Downes, B. Hughes, R. W. Swayne.

Lieut.-Col. E. B. Dowsett to be Assistant Director of Medical Services and to be acting Colonel whilst so employed.

Temp. Capt. (acting Major) G. B. St. C. Stockwell to be Major (temporary).

Capt. W. B. Marshall to be acting Major whilst specially employed, and to remain seconded.

Major C. A. Leedham-Green relinquishes his commission on account of ill-health, and is granted the honorary rank of Major.

Capt. G. White relinquishes his commission on account of ill-health, and is granted the honorary rank of Captain.

Lieuts. R. McKenzie and A. G. Yates to be Captains.

J. G. Seppelt and R. F. White to be Lieutenants.

TERRITORIAL FORCE RESERVE.

Capt. A. Burgess, from R.A.M.C., to be Captain.

ROYAL AIR FORCE.

Medical Branch.—Capt. H. A. Treadgold to be acting Major whilst employed as Major.

Capt. A. H. Todd to be acting Major whilst specially employed.

Granted temporary commissions as Captains: W. Lessey (late Capt., R.A.M.C.), G. Fehrsen, W. Lumley (late Capt., R.A.M.C.).

Granted temporary commissions as Lieutenants: R. H. Burns, M. Hyman, N. C. Cooper, S. R. E. Davies, J. Gorsky, K. D. F. Waters.

Dental Branch.—Granted temporary commissions as Lieutenants: R. S. H. Drabble, P. J. Proud, L. S. Kettlewell, G. J. Roberts.

INDIAN MEDICAL SERVICE.

The King has approved the promotion of the following officers:—Colonel to be Major-General: W. H. B. Robinson. Lieutenants to be Captains: J. B. de W. Molony, H. G. Alexander, O. Wilson, J. J. Liston, K. R. Batra, B. H. Singh, P. D. Chopra, O. R. Unger, I. D. Grant, M. M. Khan, S. N. Mukerji, H. E. Murray, A. N. Bose, J. Dow, A. S. Fry, J. G. J. Green, W. P. Hogg, R. L. Vance, J. H. G. White, H. M. Collins, G. B. Hanna, A. H. Brown, C. H. Heppenstall, E. Cotter, U. J. Bourke, D. R. Thomas, C. C. Mecredy, C. W. W. Baxter.

To be acting Lieutenant-Colonels while commanding Indian Cavalry Field Ambulances: Majors W. H. Cazaly, J. J. Urwin, E. C. Hodgson.

The King has approved the retirement of the following officers: Lieut.-Col. G. W. Jenney, in consequence of ill-health due to field service. Lieut.-Col. G. B. Irvine, C.B., in consequence of ill health due to field service, and is granted the honorary rank of Colonel.

The services of Temp. Lieut. Gokal Prasad Tiwari are dispensed with in consequence of medical unfitness.

YEOVIL AND DISTRICT HOSPITAL.—£1954 have been received by the Mayor of Yeovil's Fund towards the cost of providing a new building for the Yeovil Hospital.

Medical News.

THE INFLUENZA EPIDEMIC.

A CIRCULAR notice has been sent by the Local Government Board to all sanitary authorities, calling their attention to the recent Memorandum issued by the Board on "Epidemic Catarrhs and Influenza," and pointing out the necessity of securing nursing assistance and hospital provision. The notice encloses a circular letter from Sir Arthur Newsholme to the medical officers of health, asking that systematic inquiries, to be embodied in a special report, should be made in accordance with a given schedule into the incidence of influenza in all localities.

The Principal Medical Officer of the Local Government Board also asks that statements should be added to these reports dealing with any administrative action taken by the sanitary authorities, any distribution of precautionary advice or closure of public entertainments or schools, any provision made for hospital or domiciliary treatment of patients, for bacteriological examination, or prophylaxis by vaccines.

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the Final Examination, held from Oct. 8th to 23rd, the following candidates were approved in the undermentioned subjects, but are not eligible for diplomas:—

Medicine.—**Margarita Sargood Barfield**, Royal Free; **C. W. Bennett**, St. Bart.'s; **E. P. Brockman**, Cambridge and St. Thomas's; **C. H. Bubb**, Guy's; **Gladys Mary Cooksey**, Birmingham; **A. Innes Cox**, Middlesex; **J. C. Davies**, St. Bart.'s; **J. C. Dixey**, Oxford and St. Bart.'s; **T. H. Dobrashian**, Univ. Coll.; **A. A. Forty**, Guy's; **R. S. Foss**, St. Thomas's; **E. J. Gaffney**, Guy's; **F. A. Georger**, Buffalo Univ.; **A. C. Halliwell**, Cambridge and St. Thomas's; **W. H. Haupt**, George Washington Univ.; **A. M. Kazim**, Univ. Coll.; **W. Lambert**, Middlesex; **F. W. Lemarchant**, St. Bart.'s; **D. Livingston**, Durham; **L. Lyne**, Guy's; **A. V. R. Menon**, Madras Med. Coll.; **D. O'Donovan**, Cork and Univ. Coll.; **J. L. C. O'elyn**, St. George's; **A. G. Ord**, Guy's; **D. R. Owen**, Liverpool; **W. Reikan**, Manchester; **R. W. Revell**, Univ. Coll; **J. C. Russell**, Cambridge and London; **Mary Sylvia Stocks**, St. Mary's; **C. M. Strong**, Manitoba Univ.; **W. S. Sykes**, Cambridge and St. Bart.'s; **R. W. Warrick**, Guy's; **Mary Howarth Wild**, Liverpool; **R. B. H. Wyatt**, Oxford and St. George's; **H. B. Yated**, St. George's; and **F. Young**, Guy's.

Midwifery.—**A. F. Abbassi**, Edinburgh; **R. G. Addenbrooke**, Birmingham; **S. T. Barrett**, Cambridge and Guy's; **Grace Mary Beaven**, St. George's; **C. W. Bennett**, St. Bart.'s; **E. J. Bilcliffe**, St. George's; **Hilda Crichton Bowser**, Royal Free; **J. V. C. Braithwaite**, Guy's; **E. E. Carter**, St. Thomas's; **R. H. Clarke**, Cambridge and St. Bart.'s; **H. S. Cohen**, London; **H. N. W. Collins**, King's Coll.; **Gladys Mary Cooksey**, Birmingham; **Ursula Beatrice Cox**, Royal Free and St. Mary's; **B. A. L. Crichlow** and **R. G. Dansie**, King's Coll.; **F. P. de Caux**, St. Bart.'s; **C. Dunscombe**, Cambridge and St. Bart.'s; **D. N. Dutt**, Univ. Coll.; **Sylvia Victoria Elman**, St. Mary's; **T. G. Evans**, St. Bart.'s; **J. Freilich**, Univ. Coll.; **F. J. Good**, London; **C. Griffith-Jones**, St. Bart.'s; **H. W. Hardy**, Charing Cross; **W. G. Hay** and **G. O. Hume**, Guy's; **A. Ismail**, St. Thomas's; **F. W. Kemp**, Charing Cross; **Muriel Mercer Kenworthy**, Liverpool and Royal Free; **H. W. Kerfoot**, McGill Univ.; **C. A. Kirton**, Univ. Coll.; **P. B. Kittel**, Cambridge and St. Bart.'s; **P. Lloyd-Williams**, St. Thomas's; **N. J. Macdonald**, Cambridge and St. Bart.'s; **W. K. McKay**, Guy's; **C. F. McLean**, Cambridge and St. Thomas's; **Kathleen Harding Matthews**, St. Mary's; **Margaret Ombler Meek**, Charing Cross; **J. S. Moore**, St. Thomas's; **G. E. Morgan**, Oxford and London; **A. G. Ord**, Guy's; **Sigrid Letitia Sharpe Pearson** and **Norah Dorothy Pinkerton**, Royal Free; **A. M. Ramzy**, St. Thomas's; **Eleanor Margaret Reece**, Royal Free; **R. W. Revell**, Univ. Coll.; **A. H. Richards**, St. Mary's; **S. Rose** and **A. E. Sawday**, Guy's; **E. L. Sergeant**, London; **Sonia Strashun**, St. Mary's; **W. S. Sykes**, Cambridge and St. Bart.'s; **E. Tagoe**, Cambridge and Univ. Coll.; **C. J. Thomas**, St. Thomas's; **W. G. Tilleke**, Cambridge and Univ. Coll.; **A. H. Turton**, Birmingham; **H. W. C. Vines**, Cambridge and St. Bart.'s; **K. T. K. Wallington**, Univ. Coll.; **A. E. Ward**, St. Thomas's; **A. D. Weeden**, Middlesex; **Effie Adela Wharton**, St. George's; **K. C. Whitehall-Cooke**, St. Thomas's; **R. B. H. Wyatt**, Oxford and St. George's; and **H. B. Yates**, St. George's.

Surgery.—**A. R. Aufranc**, Middlesex; **P. Banbury**, St. Thomas's; **E. P. Brockman**, Cambridge and St. Thomas's; **J. H. Crosskey**, Birmingham; **L. Duble**, Louvain and St. George's; **F. A. Evans**, Manchester; **G. W. T. H. Fleming**, Durham; **L. E. Frazer**, **A. C. Halliwell**, and **A. T. Hawley**, Cambridge and St. Thomas's; **C. T. Helsham**, Guy's; **A. R. Hill**, Middlesex; **T. L. Hillier**, Cambridge and St. Thomas's; **F. G. Hobson**, Oxford and St. Thomas's; **C. H. S. Horwitz**, Guy's; **C. O. Hudson**, Sheffield; **G. L. Levin**, Univ. Coll.; **T. C. McKenzie**, Birmingham; **A. V. R. Menon**, Madras Med. Coll.; **G. T. Mody**, Bombay and Bristol; **D. R. Owen**, Liverpool; **F. L. Pickett**, Cambridge and Manchester; **Dorothy Priestley Priestley**, Leeds; **J. C. R. Richardson**, London; **F. G. Spear**, Cambridge and St. Thomas's; **S. R. Tattersall**, St. Thomas's; **H. W. C. Vines**, Cambridge and St. Bart.'s; and **D. E. Wijewardene**, Cambridge and St. Thomas's.

CENTRAL MIDWIVES BOARD FOR IRELAND.—The Central Midwives Board for Ireland held its second meeting at the offices of the Local Government Board, Custom House, Dublin, on Oct. 31st, when the chairman, Dr. E. Coey Bigger, proposed the following vote of condolence:—

"We, the members of the Central Midwives Board for Ireland, assembled at this, our second, meeting desire to tender to Mrs. McCarron, and all the members of her family, our sincere sympathy with them in the untimely and tragic death of Alderman McCarron. His colleagues on this Board wish to place on record their expression of their grief at the passing from their midst of one who had earned the esteem of everyone with whom he had come in contact."

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—A clinical meeting of this society was held on Nov. 1st at the West London Hospital, when the following cases were shown:—Major McAdam Eccles: 1. Arterio-venous Aneurysm in a private of 23, a German bullet passing through the right popliteal space. After being a prisoner in Germany for 15 months he became interned in Switzerland, where the late Professor Theodor Kocher operated, removing the sac, the operation lasting about five hours. A well-marked bruit is still audible; a considerable enlargement of the right calf with some venous congestion is present. 2. Fibro-sarcoma of thigh in a girl of 19, who first noticed a lump in outer side of the *left* thigh four years ago. This gradually increased in size, when a portion was removed for microscopical investigation in March, 1918. Radical operation was refused, a large local operation being performed in July, 1918. There is now local recurrence and a secondary nodule in the *right* axillary border. The patient appeared in extremely good health, with fresh colour and not losing flesh. 3. "A Foot-Hand." This extremely rare condition shows a deformity of the left hand which appears somewhat like a foot; five "toes," a "great toe," and four smaller "toes" projecting from the end of a blunted upper limb. Radiograms showed perfect development of the bones of the forearm and carpus on the deformed side, the carpal bones in the distal row being fused.—Dr. Arthur Saunders: Arthritis under Phylacogen Treatment, showing considerable improvement in the metacarpal joints affected.—Mr. H. Tyrrell Gray: 1. Gigantism of Right Index and Middle Finger in a boy of 4. 2. Congenital Dislocation of both Hip-joints.—Dr. Rickard Lloyd: Ulcerated Leg Healed by Old-fashioned Methods within 20 days.—Mr. Bishop Harman: 1. Three Cases of Detached Retina. 2. Post-polar Cataract.

NATIONAL ASSOCIATION FOR THE PREVENTION OF INFANT MORTALITY.—Three lectures on the Feeding of Children will be given by Dr. Eric Pritchard at Dr. Williams's Library, Gordon-square, London, W.C., on Nov. 12th, 15th, and 26th, at 5.30 P.M. The fee is 2*s.* 6*d.* for the three lectures. Tickets from Miss Halford, secretary, at 4, Tavistock-square, London, W.C.1.

URBAN VITAL STATISTICS.

(Week ended Nov. 2nd, 1918.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality, which had increased from 11·4 to 30·9 in the five preceding weeks, further rose to 43·0 per 1000. In London, with a population slightly exceeding 4,000,000 persons, the death-rate was 55·5, or 21·0 per 1000 above that recorded in the previous week; among the remaining towns the rates ranged from 8·8 in Carlisle, 11·0 in Stockton-on-Tees, and 12·2 in Warrington, to 75·2 in West Ham, 79·2 in East Ham, 79·5 in Oxford, 79·6 in Hull, 83·3 in Sheffield, and 83·6 in Leicester. The principal epidemic diseases caused 233 deaths, which corresponded to an annual rate of 0·7 per 1000, and included 80 from infantile diarrhœa, 54 from diphtheria, 34 from whooping-cough, 30 from scarlet fever, 29 from measles, and 6 from enteric fever. The deaths from influenza numbered 7412, against 1895 and 4482 in the two preceding weeks, and included 2458 in London, 468 in Sheffield, 269 in Leicester, 240 in West Ham, 220 in Hull, 194 in Leeds, 190 in Bristol, 170 in Liverpool, and 145 in Stoke-on-Trent. The 4285 deaths in London were the highest recorded in any week and were 524 in excess of the previous highest number registered during the influenza epidemic of 1892; of the 2458 deaths from influenza no fewer than 1369 related to persons aged 15-45 years, while in previous epidemics the highest mortality occurred at the more advanced ages. The 1201 cases of scarlet fever and 1166 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were 50 and 34 below the respective numbers remaining at the end of the previous week. The causes of 87 deaths in the 96 towns were uncertified, of which 12 were registered in London, 10 each in Leicester and Liverpool, and 7 in Birmingham.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality, which had increased from 10·6 to 29·4 in the seven preceding weeks, further rose to 30·5 per 1000. Of the 1407 deaths from all causes, 66 were classified to influenza, which was also stated as a contributory cause in 499 deaths classified to other diseases; in the previous week these numbers were 57 and 457 respectively. The 570 deaths in Glasgow corresponded to an annual rate of 28·7 per 1000, and included 9 from diphtheria, 7 from whooping-cough, 2 from scarlet fever, and 1 each from enteric fever and infantile diarrhœa. The 226 deaths in Edinburgh were equal to a rate of 35·4 per 1000, and included 2 from diphtheria and 1 each from enteric fever, scarlet fever, whooping-cough, and infantile diarrhœa.

Irish Towns.—The 501 deaths in Dublin corresponded to an annual rate of 65·5, or 18·2 per 1000 above that recorded in the previous week, and included 250 from influenza, 2 from whooping-cough, and 1 from infantile diarrhœa. The 132 deaths in Belfast were equal to a rate of 17·5 per 1000, and included 2 from scarlet fever and 1 each from enteric fever and infantile diarrhœa.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Armistices with Austria and Turkey.

STATEMENTS made in the House of Commons concerning the armistices with Turkey and Austria, and the conditions under which those countries surrender, have been received with the utmost satisfaction. These events and the military and economic exhaustion of Germany point to the early collapse of the enemy on the Western front and to the acceptance of the Allies' terms. Preparations are meantime being made for a General Election at a very early date.

The New President of the Local Government Board.

Sir AUCKLAND GEDDES has succeeded Mr. HAYES FISHER as President of the Local Government Board, and he will continue also his duties as Minister of National Service. The main function of the Ministry of National Service being to obtain men for the Army, its importance diminishes as peace draws near. In that case Sir AUCKLAND GEDDES will have an increasing amount of time to devote to his new office, where important work awaits him. The housing problem has to be seriously tackled. It is also considered highly probable that one of the tasks to which Sir AUCKLAND GEDDES will set his hand is the advancement of the scheme for a Ministry of Health. A medical man, he has already proved his capacity as an administrator.

Ministries of Health Bill.

Dr. ADDISON, the Minister of Reconstruction, is responsible for the introduction of a Bill in the House of Commons "to establish a Ministry of Health and a Board of Health to exercise in England and Wales and in Scotland respectively powers with respect to health and local government and for purposes connected therewith." The measure will be printed, and contains the proposals of the Government on this important subject. At this stage of the session, of course, it will be impossible to carry any new legislation through except by general consent.

The Midwives Bill.

The House of Lords has passed the Midwives Bill.

HOUSE OF COMMONS.

WEDNESDAY, OCT. 30TH.

Influenza at the Crystal Palace.

ANSWERING Mr. CHANCELLOR, Dr. MACNAMARA (Secretary to the Admiralty) said: There have been 120 deaths among men at the Crystal Palace during the last six months—117 from pneumonia following influenza, 1 from cerebro-spinal meningitis, 1 from cerebral abscess, and 1 from Addison's disease. The average number of men stationed at the Crystal Palace is roughly about 5600. During the course of six months the number of men passing through the Crystal Palace would be much greater than that. The main, practically indeed the only, mortality during that period has been from an epidemic of influenza, which, I regret to say, affected over 1000 men. Of the 117 men who, unhappily, died from pneumonia following influenza, none were inoculated against influenza or pneumonia. Prior to the outbreak of influenza at the Crystal Palace the average daily sick-rate had been slightly less than 3 per cent. Though the building was not originally intended as a living place, it has been satisfactorily modified subsequently to its being taken over at the beginning of the war, and the health reports prior to the present outbreak of influenza do not point to any serious objection to its continuing to be used for the purpose for which it was acquired. A very recent sanitary inspection of the building has been made, as a result of which certain minor defects in ventilation are being remedied.

Influenza in Belfast Prison.

Replying to Mr. BYRNE, who asked for particulars regarding the epidemic of influenza in Belfast Prison, Mr. SAMUELS (Attorney-General for Ireland) said: Dr. MacCormack, the medical member of the Prisons Board, specially visited Belfast Prison in reference to the influenza epidemic. He reports that there are now under medical treatment for influenza 111 prisoners committed under the Defence of the Realm Regulations and 14 officers of the prison. There is no foundation for the allegation that the food is insufficient or of poor quality, or that the medical or nursing arrangements are unsatisfactory. Special treatment and diet are afforded to each patient, and the medical officer to the prison has authority to engage additional medical assistance and trained nursing staff and to order any extra articles of food or medicines that may be deemed necessary. The prison medical officer has already called to his assistance Dr. Tweedie, of Belfast, and Professor H. L. McKisack, M.D., as consultant. There is no reason to think that the prisoners are not receiving all proper care and medical treatment.

THURSDAY, OCT. 31ST.

Influenza in Belfast Prison.

IN answer to Mr. KING, who asked for information concerning the influenza epidemic in Belfast Prison, Mr. SAMUELS said: The most recent information is as follows:—The number of cases of influenza that have occurred is 118. Of these nine patients have been removed to extern hospitals on the recommendation of the medical officer of the prison. The large majority of the remaining cases are suffering from a mild type of the disease and satisfactory treatment for them is available in the prison. Medicines and special dietary have been prescribed where necessary in individual cases, and where special nursing is required the patient is removed to an extern hospital. The medical officer has already secured the assistance of two other medical men as well as of Professor McKisack, M.D., consultant, and there is no reason to think that the cases are not receiving all proper attention.

Venereal Disease and Regulation 40 D.

Mr. LEES SMITH asked the Home Secretary how many resolutions he had now received demanding the withdrawal of Regulation 40 D of the Defence of the Realm Act.—Sir G. CAVE answered: About 600 such resolutions have been received at the Home Office.

Mr. W. ANDERSON asked whether the right honourable gentleman was aware that Regulation 40 D of the Defence of the Realm Act had been condemned by the most representative conferences of women; whether his attention had been called to medical opinion; that the regulation had been discredited as a public health measure; and that the presence of infection could not be proved or disproved by examination; whether he was aware of the number of women against whom no charge could be established, who had nevertheless been arrested, imprisoned, and remanded for examination under this regulation; and whether the Government was now prepared to take steps to annul this regulation.—Sir G. CAVE said in reply: The question, which is one of extreme difficulty, is being considered by a strong committee upon which both sexes are represented, and the Government must await the result of their deliberations before taking action.

Mr. H. SAMUEL: Can my right honourable friend say when the report will appear?—Sir G. CAVE: I should think certainly next month. I hope so.

Training Limbless Men in Ireland.

In reply to Mr. MACCAW, Sir A. GRIFFITH-BOSCAWEN (Parliamentary Secretary to the Ministry of Pensions) said: Several schemes of training suitable for limbless men are in operation in the north of Ireland.

Major NEWMAN: Are there any similar institutions in the south of Ireland?—Sir A. GRIFFITH-BOSCAWEN: Yes; there are certain training schemes in the south of Ireland.

Medical Service of the Air Force.

Sir WATSON CHEYNE asked the Under Secretary to the Air Ministry whether the principles laid down in the Medical Advisory Committee's Report, 1917, were now being carried into practice and what progress had been made.—Major BAIRD: A reorganisation of the medical arrangements of the Royal Air Force is now being considered in connexion with the appointment of a successor to the medical administrator.

Mr. JOYNSON-HICKS: Does that mean that the Medical Administrative Committee which was established in consequence of my honourable friend's report has been done away with?—Major BAIRD: The committee under the new arrangement will not be administrative, but will carry out advisory functions.

Sir WATSON CHEYNE asked whether the medical administrator of the Air Service had resigned and, if so, why; and what arrangements were being made in regard to a successor?—Major BAIRD: The resignation of the medical administrator originated in a difference of opinion between himself and the Medical Administrative Committee in regard to their respective spheres of responsibility. The appointment of his successor will be made public at an early date.

Mr. JOYNSON-HICKS: Has this appointment been offered to any officer at present?—Major BAIRD: The appointment is under consideration and an announcement will be made.

Sir WATSON CHEYNE asked whether the Medical Administrative Committee had been dissolved and, if so, why.—Major BAIRD wrote in reply: Under a reorganisation of the medical arrangements of the Royal Air Force now under consideration the administrative functions of the Medical Administrative Committee will cease, and it will become purely advisory.

MONDAY, NOV. 4TH.

Discharged Tuberculous Soldiers.

In reply to Lord H. CAVENDISH-BENTINCK, Sir E. CORNWALL (who replied on behalf of the representative of the Ministry of Pensions) said: A scheme for the domiciliary visiting of discharged men suffering from tuberculosis has been under consideration by my department during the last six months and has now been settled in conjunction with the Local

Government Board and the National Health Insurance Commission. Sanction for the necessary expenditure was received on May 17th last, but no part of the expenditure has yet been incurred, nor, I understand, have any appointments been made. The Local Government Board will very shortly issue the necessary instructions to the local authorities concerned. I would add that the present scheme is an extension of the arrangements for visiting and after-care which are already being carried out by local authorities in many areas.

Artificial Limbs.

Answering General CROFT, who asked a question bearing on artificial limbs for soldiers, Sir E. CORNWALL said: Artificial limbs very seldom need renewal owing to the shrinking of the stump, new buckets only being necessary, but it is clearly more satisfactory to supply a second limb when shrinkage of the stump has taken place and in the interval to supply a provisional limb in case of emergency.

Treatment of Shell Shock.

Mr. WING asked the Under Secretary for War whether he would give the names and situation of the institutions provided by the War Office for the care and treatment of uncertifiable soldiers who had been mentally unhinged in consequence of the severity of the strain through which they had passed; how many purely mental cases were segregated in each institution; what was their occupation; how many had been discharged recovered during the present year; and in how many instances were these institutions run by lunacy staffs and presided over by mental specialists connected with lunacy organisations.—Mr. MACPHERSON replied: I presume my honourable friend is referring in the first part of his question to men suffering from shell shock and neurasthenia. No purely mental cases are segregated in any institution. The occupations of the men whilst in hospital are mainly agriculture and farm work. There are also indoor occupations, such as carpentry, and also recreation and amusement. It would take a considerable time and involve a large amount of labour to ascertain the number who have been discharged as recovered, and I hope my honourable friend will not press for this information. None of the institutions are run by lunacy staffs, but in three of them the administrator is a mental specialist. The following is the list of institutions referred to:—Maudsley Neurological Clearing Hospital, Denmark Hill, S.E.; Springfield War Hospital, Upper Tooting, S.W.; Red Cross Military Hospital, Maghull; Abram Peel War Hospital, Bradford; Ewell (County of London) War Hospital, Epsom; 1st Southern General Hospital (Monyhull Neurological Section), Birmingham; Glen Lomond War Hospital, Fife; Dunblane War Hospital, Perthshire; Seale Hayne Neurological Hospital, Newton Abbot, South Devon; Gateshead War Hospital, Stannington, Newcastle-on-Tyne; Neurological Section, 4th Southern General Hospital, Plymouth; Neurological Section, 2nd Western General Hospital, Brinnington, Stockport; East Preston Military Hospital, near Worthing; Neurological Section, King George V. Hospital, Dublin; and Ashhurst War Hospital, Littlemore, Oxford.

Medical Administrator of Air Force.

Major TERRELL asked the Under Secretary to the Air Ministry whether the Air Council or the Secretary of State had offered or proposed to offer the appointment of Medical Administrator of the Medical Air Services of the Air Force to an officer of the R.A.M.C. on the terms that he would, in the administration of the Air Force Medical Service, carry out the principles recommended by the Watson Cheyne Advisory Committee; whether such officer had accepted or refused to accept the appointment on such terms, and if such officer had refused to accept such appointment on such terms, what action did the Secretary of State or the Air Force Council intend to take in the matter, and would the Secretary of State assure the House that whoever was appointed would be required to carry out the said principles in the administration of the Air Force Medical Service.—Major BAIRD replied: The post of Medical Administrator has been offered to Colonel Fell, R.A.M.C. One of the conditions of the offer is that he will be guided by the principles laid down in the report of the Watson Cheyne Committee, subject to certain amendments as regards principles of administration.

Major TERRELL: Has he accepted or refused these terms?—Major BAIRD: Colonel Fell is at present engaged in visiting the stations of the R.A.F. We shall get his answer when he returns.

TUESDAY, NOV. 5TH.

Medical Research Committee and Influenza.

Mr. ROWNTREE asked the representative of the National Insurance Commissioners whether the Medical Research Committee of the National Insurance Commissioners had for some time past been undertaking important research work in connexion with influenza; whether the results of the research had been made public; and, if so, whether a full use was being made of the knowledge they had acquired.—Sir E. CORNWALL answered: Yes, Sir, the Medical Research Committee have been continuously engaged since the beginning of the first wave of the epidemic last spring upon special efforts in regard to the etiology and the prevention of influenza and its complications. They have collected and periodically published expert reports of observations from all quarters, and have organised special researches in regard to it. These efforts have been more restricted than would otherwise have been the case owing to the urgent needs of the Army for pathological and other investigations into numerous kinds of diseases and wound problems, in which the Committee have also been heavily engaged from the outbreak of the war until now. The Committee's activities in all these fields are fully set out in the annual reports to me, which are presented to Parliament and have a wide distribution amongst experts and the profession, for whom, of course, they are from their nature mainly useful. Their fourth report, which is now before me, will be published in a few days. In reply to the second part of the question I may say that in the first week of August the Committee sent to the medical newspapers for the information of the medical and health authorities a résumé of various important communications on the subject of influenza, including an indication of the likelihood of the onset of secondary waves of the epidemic in the autumn, which their inquiries led them to expect would be more severe in character than the primary wave of last spring. For that reason the Committee on that date publicly invited observations from experts at various centres with a view to the further organisation of coördinated work in the study of those secondary waves. The severity of the present epidemic now shows that that anticipation on the part of the Committee, which can be read in the *British Medical Journal* of August 10th, was all too fully correct, and that the Committee did its duty in giving the warning beforehand to the expert authorities. As regards the actual epidemic itself, the Committee have been continuously collecting expert information likely to be useful to the health authorities and the medical profession as to its nature and progress in Europe from the chief foreign sources, including much important work done during these months in Germany and Austria. This the Committee have periodically published in English, combined with the results of British observations in their monthly medical supplements, of which several thousand copies are regularly distributed amongst professional experts and put on sale, early copies being sent to the Medical Department of the Local Government Board and other Government departments concerned. My honourable friend should see especially the September, October, and November issues, of which I am sending him copies. As regards the practical side of the problem I should state that the Committee were strongly represented at the important conference of bacteriologists held at the War Office some weeks ago on the possibilities of utilising vaccines for the prevention or treatment of the prevailing forms of influenza amongst the troops, under the chairmanship of Sir William Leishman, Adviser in Pathology to the Army Medical Department, and also a member of the Medical Research Committee. The outcome of that discussion was issued to the medical press by Sir William Leishman, and it also appeared in the pamphlet issued by the Local Government Board on the subject. In addition to this the Committee's bacteriological department have been giving aid to the War Office in the steps which have been taken to prepare and provide protective vaccines against the dangerous complications of secondary infections amongst the troops, and the Committee's secretary concurrently made suggestions to the medical officer of the Local Government Board for analogous steps to be taken by that Board for the benefit of the civil population. In this connexion, and in reply to the third paragraph of the question, I must remind my honourable friend that it is not the duty of the Medical Research Committee to carry out the actual treatment or prevention of this disease, which is the province of the public health authorities, local and central, but to obtain new knowledge and valuable information in regard to it by special researches and otherwise, and to have this readily available to those health authorities for them to put to its proper practical uses for the benefit of the civil population. The earlier paragraphs of this reply will have shown, I hope, that the Committee have carried out their proper functions in this respect with considerable effectiveness, especially in view of the difficulties occasioned by the constant loss of trained researchers claimed for military service.

WEDNESDAY, NOV. 6TH.

Medical Women in Military Hospitals.

Sir P. MAGNUS asked the Under Secretary for War whether, having regard to the fact that women doctors serving in military hospitals discharged similar duties and received the same pay as men doctors, and were entitled to wear the Royal Army Medical Corps badge, he would take steps to

rectify the anomaly of their being refused even honorary commissions or to wear badges of rank which would be helpful to them in maintaining discipline; and whether he could arrange that they obtained equivalent relief from income-tax as was granted to men doctors under the service rate.—Mr. MACPHERSON replied: I have been into this question very thoroughly, and I find that it is legally impossible to grant commissions in the Army to women. Legislation would be necessary. I should be glad to consider the granting of marks of distinction among themselves.

Sir P. MAGNUS: Has the right honourable gentleman any hope of being able to introduce the necessary legislation this session? Would the marks of distinction which he proposes be such as to enable these medical women to maintain the necessary discipline in order to carry out the work which they have to do?—Mr. MACPHERSON: As to legislation I will consult the Chancellor of the Exchequer. In regard to marks of distinction I am strongly opposed to the utilisation of the present Army marks of distinction. I would prefer marks of distinction to take the form of those which are given to administrators and directors of certain Women's Corps.

Mr. CURRIE: Will the right honourable gentleman answer the last part of the question as to relief from income?—Mr. MACPHERSON: I think I have already informed my honourable friend privately that that is purely a question for the Treasury.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.
THURSDAY, Nov. 14th.—Papers:—Mr. A. Mallock: Sounds produced by Drops falling on Water.—Mr. G. H. Hardy and Mr. S. Ramanujan: On the Coefficients in the Expansions of Certain Modular Functions.—Hon. R. J. Strutt: The Light scattered by Gases—its Polarisation and Intensity.—Dr. F. Horton and Ann C. Davies: An Investigation of the Ionizing Power of the Positive Ions from a Glowing Tantalum Filament in Helium (communicated by Mr. C. T. R. Wilson).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.1.

Wednesday, Nov. 13th.

GENERAL MEETING OF FELLOWS: at 4.30 P.M.
Presentation of the Diploma of Honorary Fellowship to Sir Alfred Keogh, G.C.B. (late Director-General of the Army Medical Service).
Discussion:
On "Influenza, with particular reference to the Epidemiology, Pathology, Clinical Aspects, and Complications," to be opened by Sir Arthur Newsholme, K.C.B., M.D.

MEETINGS OF SECTIONS.

Thursday, Nov. 14th.

NEUROLOGY (Hon. Secretaries—C. M. Hinds Howell, B. G. Fearnsides): at 8.30 P.M.
Presidential Address:
Dr. Henry Head, F.R.S.: Some Principles of Neurology.

Friday, Nov. 15th.

OTOLOGY (Hon. Secretaries—J. F. O'Malley, H. Buckland Jones): at 5 P.M.
Cases will be shown by—
Mr. Stuart-Low, Mr. Hunter Tod, Mr. Mollison, Dr. Dan McKenzie, and others.
ELECTRO-THERAPEUTICS
CLINICAL
MEDICINE
SURGERY: at 8.30 P.M.
On the invitation of the Section of Electro-Therapeutics a Joint Meeting of the above Sections will be held when a paper will be read by—
Dr. E. I. Spriggs on "The Radiography of the Vermiform Appendix" (illustrated by a number of lantern slides and drawings by Mr. Marxer).

MEDICAL SOCIETY OF LONDON, 11, Chandos-st., Cavendish-sq., W.
MONDAY, Nov. 11th.—8.30 P.M., Discussion on Reconstruction and the Practice of Medicine (introduced by Col. H. J. Waring, R.A.M.C.T.)

SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, Cavendish-square, W.
FRIDAY, Nov. 15th.—5.30 P.M., Paper:—Lt.-Col. A. Balfour, C.B., C.M.G.: Sanitary and Insanitary Makeshifts in the Eastern War Areas.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.
Clinics each week-day at 2 P.M., Wednesday, Friday, and Saturday also at 10 A.M.
(Details of Post-Graduate Course were given in issue of Nov. 2nd.)

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
Out-patients each day at 2.30 P.M.

THE THROAT HOSPITAL, Golden-square, W.
MONDAY, Nov. 11th.—5.15 P.M., Special Demonstration of Selected Cases.
THURSDAY.—5.15 P.M., Clinical Lecture.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.
TUESDAY, Nov. 12th.—4 P.M., Dr. J. L. Bunch: Itching Skin Diseases and their Treatment.
WEDNESDAY.—5 P.M., Dr. W. Griffith: Skin Diseases in the Army.
THURSDAY.—5 P.M., Chesterfield Lecture:—Dr. M. Dockrell: The Diagnosis and Treatment of the late Eruptions of Syphilis.

ROYAL INSTITUTE OF PUBLIC HEALTH, in the Lecture Hall of the Institute, 37, Russell-square, W.C.
Course of Lectures on Public Health Problems under War and After-war Conditions (each Lecture will be followed by a Discussion):—
WEDNESDAY, Nov. 13th.—4 P.M., Lecture VI:—Miss Jane Walker, M.D.: The Tuberculous Soldier.

NATIONAL ASSOCIATION FOR THE PREVENTION OF INFANT MORTALITY, at Dr. William's Library, Gordon-square, W.C.
Three Lectures on the Feeding of Children:—
TUESDAY, Nov. 12th.—5.30 P.M., Lecture I.:—Dr. E. Pritchard: Some General Principles.
FRIDAY.—5.30 P.M., Lecture II.:—Dr. E. Pritchard: The Quality of the Food.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BROWN, R. DODS, M.D., has been appointed Medical Superintendent of the Aberdeen Royal Asylum.
COLEMAN, C. J., M.D. Cantab., Certifying Surgeon under the Factory and Workshop Acts for the Lincoln District of the county of Lincoln.
FORTESCUE-BRICKDALE, J. M., M.D. Oxf., Physician to the Bristol Royal Infirmary.
MARSDEN, W. H., L.R.C.P. & S. Edin., L.F.P.S. Glasg., Acting Medical Officer for the Bleadon District (Axbridge).
NEILD, NEWMAN, M.B. Viet., Physician to the Bristol General Hospital.
NIXON, J. H., M.D. Lond., Medical Officer for the Lacock District (Chippenham).

Vacancies.

For further information refer to the advertisement columns.

Birkenhead Borough Hospital.—Jun. H.S. £170.
Bristol Royal Infirmary.—H.P. and H.S. £120.
Chester Royal Infirmary.—H.S. £200.
Devonport, Royal Alb rt Hospital.—Res. H.S. £200.
Dorchester, Dorset County Council Education Committee.—School Dentist. £350.
Essex County.—M.O.H. £1000.
Glamorgan County Asylum, Bridgend.—Temp. Asst. M.O. £8 6s. p.wk.
Glasgow, Lightburn Joint Hospital, Shettleston.—Res. Phys. Sup. £300.
Guy's Hospital, S.E.—Female Cli s. Asst. 1 guinea per attendance.
Hospital for Sick Children, Great Ormond-street, W.C.—H.S. £160.
Leeds City Infectious Diseases Hospital, Seacroft.—Asst. M.O. £300.
London Temperance Hospital, Hampstead-road, N.W.—Medical Registrar. 40 guineas.
Manchester County Asylum, Prestwich.—Locum Tenens. £7 7s. p.wk.
Manchester Education Committee.—Two Temp. Asst. M.O's. £400.
Norwich, Norfolk and Norwich Hospital.—H.P. and H.S. £400 each.
Perth, James Murray's Royal Asylum.—Phys.-Superintendent. £800.
Reading, Royal Berkshire Hospital.—H.P. £250.
Roll of Honour Hospital for Children, 688, Harrow-road, W.—Female Asst. P.
Royal Free Hospital, Gray's Inn-road, W.C.—Female H.S.
Salford Union Infirmary.—Third Res. Asst. M.O. £300.
Sheffield, East End Branch of the Children's Hospital.—H.S. £150.
Sheffield Royal Infirmary.—Two H.S.'s. £150.
Stoke-on-Trent County Borough.—Temp. Tuberc. Officer. £350.
Wallasey, Victoria Central Hospital.—Hon. Oph. S.
Wolverhampton and Staffordshire General Hospital.—H.S. £200. Also Sen. Student.
York City.—Temp. Tuberc. Officer. £500.
York City Asylum, Fulford.—Temp. Asst. M.O. £350.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Llanfair Caereinion, Montgomery, and at Ballyfeard, co. Cork.

Births, Marriages, and Deaths.

BIRTHS.

MANSFIELD.—On Oct. 30th, at Sevenoaks, the wife of Lieutenant P. A. Mansfield, R.A.M.C., of a son.
NICHOLSON.—On Nov. 2nd, at Blockley, the wife of Major C. Nicholson, R.A.M.C., of a daughter.

DEATHS.

DOWNIE.—On Oct. 29th, at a British general hospital abroad, of influenzal pneumonia, James Maitland Downie, B.A. Cantab., M.R.C.S. Eng., Captain, R.A.M.C., in his 26th year.
MEIKLEJOHN.—On Oct. 31st, at Holland-road, W., John William Sinclair Meiklejohn, M.D., Deputy Inspector-General of Hospitals and Fleets, R.N., aged 89.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

BOOKS, ETC., RECEIVED.

COMMITTEE OF ORGANISATION, VIth INTERNATIONAL DENTAL CONGRESS, 19, Hanover-square, London.
Transactions of the VIth International Dental Congress. 30s. net.

CRANTON, HEATH, London.
On the Brain. By T. S. Dowse, M.D. 5s.

MARLBOROUGH AND Co., London.
Italian Self-taught, Grammar with Key (Thimm's System). 2nd ed. By G. Dalla Vecchia and A. C. Panagulli. 5s. 6d.

MURRAY, JOHN, London.
Junior Course of Practical Zoology. By the late A. Milnes Marshall, M.D., and C. H. Hurst, Ph.D. Edited and Revised by F. W. Gamble, D.Sc. 12s.

SIMPKIN AND MARSHALL, London. JOHN WRIGHT, Bristol.
On the Nature of Things. By Hugh Woods, M.D.

SIMPKIN, MARSHALL, AND CO., London. WARREN AND CO., Winchester.
New Army Cookery Book. By Mrs. W. A. Featherstone, Q.M.A.A.C. 1s. 3d.

THE BUILDER, LTD., 4, Catherine-street, London, W.C. 2.
Fuel Economy in Cooking Apparatus. By A. H. Barker, B.Sc. 1s. 6d.

UNIVERSITY PRESS, Oxford.
Trench Fever. Report of Commission, Medical Research Committee, American Red Cross. By Major R. P. Strong, M.R.C.

YEAR BOOK PUBLISHER, Chicago.
Practical Medicine Series. Vol. IV. Pediatrics, by J. A. Abt, M.D., and A. L. Levinson, M.D. Orthopedic Surgery, by E. W. Ryerson, M.D. $1.40.

Communications, Letters, &c., to the Editor have been received from—

A.—Dr. Ayres, Liverpool; Dr. R. W. Allen, Lond.; Association for Moral and Social Hygiene, Lond., Sec. of; Mr. R. J. Albery, Lond.; Australian Medical Force, D.M.S. of, Lond.; Dr. S. H. Appleford, Hoddesdon.

B.—Messrs. A. E. Braid and Co., Lond.; Dr. B. Baskett, Rayleigh; "Barrister"; Board of Trade, Lond.; Surg.-Com. W. Bastian, R.N.; Messrs. Butterworth and Co., Calcutta; Messrs. J. Bale, Sons, and Danielsson, Lond.; Mr. J. L. Balderston, Lond.; Dr. W. H. Bishop, Wylam-on-Tyne; Capt. W. G. Ball, R.A.M.C.(T.); British Fruit Evaporation Co., Lond.; Mr. G. S. Bigg, Lond.; Mr. P. Boustield, Lond.; Bread and Food Reform League, Lond.

C.—Dr. H. C. Cameron, Lond.; Mr. R. A. G. Chambers, Burnley; Dr. F. G. Crookshank, Lond.; Clerical, Medical, and General Life Assurance Society, Lond.; Col. S. L. Cummins, C.M.G., A.M.S; Dr. E. S. Chesser, Lond.

D.—Mr. R. I. da Costa; Dr. H. Dally, Lond.; Messrs. Duncan, Flockhart, and Co., Edinburgh; Dr. H. H. Dale, Lond.

F.—Capt. J. G. Forbes, R.A.M.C.; Factories, Chief Inspector of, Lond.; Mrs. G. Finch, Rickmansworth; Mr. C. E. S. Flemming, Bradford-on-Avon; Hon. Surg.-Lt.-Com. P. Fildes, R.N.V.R.

G.—Guest Hospital, Dudley; Mr. H. Gardiner, Lond.; General Medical Council, Lond., Acting Registrar of; Dr. H. J. Gauvain, Alton; Dr. H. T. Gillett, Oxford.

H.—Dr. J. Haddon, Denholm; Mrs. E. Hancock, Lond.; Major W. E. Home, R.A.M.C.

J.—Lt.-Col. S. P. James.

K.—Dr. W. Kidd, Cheltenham.

L.—Dr. S. C. Lawrence, Lond.; Dr. C. E. Lea; Local Government Board, Lond.; Dr. R. B. Low, Lond.; Local Government Board for Ireland, Dublin; Prof. H. Littlejohn, Edinburgh.

M.—Mr. J. B. Macalpine, Manchester; Lt.-Col. J. N. MacLeod, G.M.G., C.I.E.; Dr. J. C. McKerrow, Lond.; Mr. F. T. Mullett, Cambridge; Mr. J. McLaggan, Torphins.

N.—National Association for the Prevention of Consumption, Lond.; Capt. T. P. Noble, R.A.M.C.

P.—Dr. W. T. G. Pugh, Carshalton; Miss M. E. Pearson, Lond.; Dr. H. A. Powell, Lond.; Mrs. G. W. Pocock, Portishead.

R.—Royal Institution, Lond.; Dr. Rivers, Worsboro' Dale; Royal Free Hospital, Lond., Sec. of; Dr. W. M. Richards; Royal College of Surgeons of England, President and Council of; Miss J. Ross, Glasgow; Royal Society, Lond.; Dr. R. E. Rentoul, Liverpool.

S.—Dr. A. Savill, Lond.; Societat de Biologia de Barcelona; Dr. E. I. Spriggs, Banff; *The Sphere*, Lond., Editor of; Society of Tropical Medicine and Hygiene; Mr. J. T. Segrue, Lond.; Surg.-Lieut.; Mr. W. A. Sands, New York; The Stratford Company, Boston; Mr. W. J. Stevenson, Lond.; Dr. R. V. Solly, Exeter; Capt. V. B. Sorapure, R.A.M.C.; Sir Walter M. Fletcher, K.B.E., Lond.

T.—Mr. B. C. Tillett, Lond.; Lt.-Col. C. N. Thornton, S.A.M.C.; Dr. J. Tatham, Oxted; Mr. F. Triefus, Lond.; Tasmania, Agent-General for, Lond.

U.—United Water Softeners, Ltd., Lond.

V.—Capt. A. B. Vine, R.A.M.C.

W.—Dr. L. B. Weatherly, Bournemouth; Dr. C. H. Whiteford, Plymouth; Dr. T. Wilson, Birmingham; Dr. W. H. Wynn, Birmingham,

Communications relating to editorial business should be addressed exclusively to The Editor of THE LANCET, 423, Strand, London, W.C. 2.

A WILTSHIRE CENTENARIAN.—Major J. Awdry, V.D., of The Paddock, Chippenham, recently celebrated the 100th anniversary of his birthday.

LITERARY INTELLIGENCE.—Dr. Ernest Muir, of the Mission Hospital, Kalna, has written a book with the object of placing within the reach of the medical practitioner in small towns and villages in India a guide to the diagnosis and treatment of kala-azar, which in some parts of India is very prevalent. Sir Leonard Rogers has furnished a foreword to the work.—Messrs. Cassell and Co. announce the forthcoming appearance of a sixth edition of Luff and Candy's "Manual of Chemistry," revised and enlarged by Mr. Candy.

Notes, Short Comments, and Answers to Correspondents.

THE MENACE OF VENEREAL DISEASE.

THE fourth lecture on "Public Health Problems under War and After War Conditions," dealing with the prevention and abortive treatment of venereal disease, was delivered at the Royal Institute of Public Health on Oct. 30th by Lieutenant-Colonel L. W. Harrison, D.S.O. Sir George H. Makins, President of the Royal College of Surgeons of England, who presided, introduced the lecturer by stating that the present war might be followed by a huge increase in venereal disease throughout the country, and unless it was combated the result to the nation would be disastrous. Two classes of women, amateur and professional, said Lieutenant-Colonel Harrison, infected our soldiers, and, generally speaking, two-thirds of the cases of venereal disease dealt with among soldiers was due to infection by the amateurs. After the war the burden of combating the disease would fall chiefly on the civilian community. More had been done in the matter of education in this connexion by a few devoted workers in the four years of the war than during the past 400 years, but ignorance was still appalling, and it was necessary that the public should know how to protect itself against the disease. Syphilis comprised only about one-quarter of venereal disease, and although we had admirable remedies against it the long periods of treatment under which the patient must be under observation made treatment costly. The successful management of gonorrhœa was immensely more difficult than that of syphilis, though, unfortunately, a large number of doctors still looked upon it as a light matter. It was one of the most difficult tasks in medicine to clear the genital passage from the gonococcus. From a medical point of view the prevention of venereal disease was as easy as cure was difficult. With regard to soldiers, experiences at Aldershot had shown that the admission-rate for venereal diseases could be materially lowered by providing healthy distractions. In 1885 the ratio per 1000 per annum of admissions for venereal disease was very high, but it gradually decreased until the period of the South African War, when there was a relapse. From then onward to 1913 a decrease was again shown. This the lecturer considered to be due to the fact that Aldershot had been made a model home for the soldier, who need not leave barracks in order to find amusements and recreation of congenial kinds. From this he argued that something more might be done in providing healthy distractions for civilian working men. If workmen's clubs were made something better than pot-houses, and places provided where men could be really comfortable in their leisure hours, it would not only tend to reduce the spread of venereal disease, but increase efficiency, and in terms of pounds, shillings, and pence would be profitable. With regard to segregation of women, the proper inspection of women on a large scale was impracticable. The best plan for dealing with prostitutes was to act on the assumption that all were diseased and teach them how to avoid infecting the men. But if we could make the prostitute safe, there remained still the perfectly hopeless class of amateurs to deal with. The greatest hope lay in breaking the chain at the male end by prophylactic treatment, but disinfection must be carried out soon after connexion. He advocated the appointment of subsidiary centres for treatment after instruction at the central clinics, but whatever arrangements were made for the treatment of venereal diseases it was necessary to have the coöperation of the public, and it was the duty of the medical profession to secure that coöperation by education.

Colonel Walker testified to the excellent results of prophylactic treatment on the American soldier in France.

Sir Thomas Barlow said that the moral side and medical side of the question were not incompatible, and so long as we could use prophylactic measures, not as an encouragement to men to expose themselves, but as a means of helping them after they had gone astray, it was the imperative duty of the medical profession to do so.

Sir George Makins contended that the question of continence was no more than abstention from alcohol or anything else, and we ought not to make it easier for people to be incontinent.

The lecturer, in reply to questions, did not consider that prophylactic treatment encouraged sexuality. We were dealing with an implacable foe, and it was no more unchristian to use the methods indicated than to fight on Sunday or use a gas against another implacable foe. Colonel Harrison also said that teetotalers formed a large proportion of venereal patients, and in one hospital 34 per cent. of venereal cases up to date proved to be total abstainers. He could not explain the circumstance, but thought it might be due to the fact that the abstainers

were bored by the distractions provided for them. Colonel Walker agreed that many teetotalers were infected; he could not explain the matter, but admitted, on the other hand, that alcohol and the prostitute went hand-in-hand.

THE ROYAL EARLSWOOD INSTITUTION FOR MENTAL DEFECTIVES.

WE have recently received the seventy-first annual report of this institution, formerly known as the Earlswood Asylum. In a spirit of war economy the report for 1917 is severely curtailed, and we regret the absence of the statement contributed by the medical superintendent (Dr. C. Caldecott), which has usually formed an interesting supplement to the report of the board of management. It is unsatisfactory to learn from the latter that this old-established charity has suffered from a falling-off of annual subscriptions owing to war conditions, which have also led to a serious increase of expenditure in food, clothing, and establishment charges. Consequently the board have had to resort to bankers' loans amounting to £15,000. Payments (both large and small) received for patients furnished during 1917, apart from charitable contributions, over £22,000, a sum which would meet about half of the year's total expenditure. It appears from two paragraphs concluding the report that the general health of the patients had been well maintained in spite of dietary difficulties and a mild epidemic of measles extending to 144 cases. An unusual number of patients of advanced years and lengthened residence had died during 1917.

Appended statistical tables furnish some items of medical interest. During 1917, 43 cases were admitted or readmitted, 34 were discharged, and 39 had died. The average number resident had been 478—318 males, 160 females—and calculated on this number the percentage of deaths for 1917 amounted to 8·15, a ratio greatly in excess of previous records of mortality during the 70 years' existence of the institution. A table showing the certified causes of death attributes 17 of the 39 deaths to tuberculous affections and 3 to epilepsy; and we gather that amongst the deaths recorded were those of 3 sexagenarians and of 3 septuagenarians, the oldest being a man of 77. The comparatively large number of elderly cases has involved a higher death-rate.

A PIONEER OF INFANT WELFARE.

MUCH suffering has been mitigated by the benevolent work of Mr. Nathan Straus, of the New York Pasteurised Milk Laboratories, who has been a pioneer in the saving of infant life by distributing at his own expense pasteurised milk to the poor of New York City, while in other generous ways he has served the poor and homeless. His activities in ministering to distress in the Eastern sphere of war have prompted the Rev. Rabbi Roth, on the occasion of the Jewish New Year, to send through the American Consul-General in Cairo the following telegram, which has been acknowledged by Mr. Lansing, of the State Department, Washington:—

For Nathan Straus.—In the name of thousands saved from starvation by your institution, I wish you and your family happy New Year and prosperous future. May God bless you.

Besides establishing a soup kitchen two years before the war, Mr. Straus has since started a Health Bureau and Pasteur Institute in Jerusalem, the activities of which institution extend throughout Palestine, and which has been used by the authorities to check the spread of cholera and other infectious diseases.

EASY CAR-STARTING IN COLD WEATHER.

Mr. J. F. Rey, M.R.C.S., writes from Bognor that, like many others who do not possess a heated garage, he has for years experienced great trouble in starting his car in frosty weather. He continues:—

"Having reached the limit of my patience with the possession of a self-starter car, and determined not to misuse the accumulators, I sat down and devoted a quarter of an hour to thinking out the problem, and, to cut a long story short, proceeded to put my theory into practice. Triumphantly carrying out a kettleful of boiling water (about a pint), at first I cautiously poured the contents over the induction pipes, carburettor, and spraying chamber, putting previously a small tin cap over the hole on top of the float chamber. I was gratified that at the first turn of the handle, or the first push of the self-starter, the engine started as though on a hot summer's day. One need not be afraid of pouring boiling water over the induction apparatus, as these are all hollow tubes of metal and no harm can come to them, nor is there any fear of water getting into the carburettor with the engine at rest and a small plug or plate placed over the small hole of the float chamber. I am certain that this simple method will save motorists untold misery."

PAYING PATIENTS AND THE WEST OF ENGLAND EYE INFIRMARY, EXETER.

THE annual meeting of the subscribers to this institution was recently held. The medical report stated that 2724 patients had been treated during the past year. The daily average number of in-patients was 16. It was decided that patients who had small means and were willing to pay towards the cost of treatment should be charged a fee, the amount being arranged between the committee and the medical officer in charge of the case.

ANTENATAL CARE IN THE U.S.A.

THE birth-rate in the United States has not decreased to an appreciable degree so far during the war, while the work of saving babies is making progress. A measure likely to help much in reducing infant mortality from congenital causes has been recently introduced into the United States Senate by Senator Robinson, entitled "A Bill to Encourage Instruction in the Hygiene of Maternity and Infancy, and to Extend Proper Care for Maternity and Infancy; to Provide for Coöperation with the States in the Promotion of Such Instruction and Care in Rural Districts; to Appropriate Money and Regulate its Expenditure, and for Other Purposes." This Bill provides for subsidising the States up to a sum of $10,000 a year each, with the provision of an additional subsidy, provided the State raises an equal amount of money to be used for the employment of rural nurses for antenatal instruction and maternity aid.

PREVALENT DISEASES IN DOMESTIC ANIMALS.

THE annual report of the Chief Veterinary Officer for the year 1917, which has just been issued (H.M. Stationery Office, price 2*d.*), deals with four diseases affecting horses and cattle which have been of special importance during the year. 10,261 suspected outbreaks of swine fever were reported, but only 2104, or a little more than one-fifth, of the outbreaks confirmed. Evidently pig diseases are still very imperfectly understood, and there is a tendency among breeders to class all affections of the pig as swine fever. An American practitioner recently stated that 40 per cent. of the average veterinary practice in Iowa was swine practice and he made a particularly strong plea for practitioners to get away from the belief prevalent some years ago that a sick hog necessarily had cholera.

Results are compared in the serum and non-serum outbreaks. Roughly, about 23 per cent. more pigs were freed from swine fever by the serum method than without it. This represents a good saving, and is encouraging. Where pigs are ripe and not breeding stock it is useful to slaughter and salve the pigs exposed to infection. From observations made it appears that large numbers of affected pigs were killed for food, and no doubt little harm and much economy were effected by the procedure. There were 25 outbreaks of glanders, a decrease of 19 as compared with 1916—469 horses and 1 mule were on infected premises, and 63 animals, including the mule, were destroyed, being found infected clinically or by means of the test. By post-mortems in 58 cases the presence of glanders was confirmed. Cattle and pigs furnished the majority of the cases of anthrax, and 203 out of 343 cases on previously clean premises were ascribed to the use of imported feeding stuffs. In 26 cases the disease was found in carcasses that had reached slaughter-houses or knackers' premises—a rather disturbing fact. Eight human beings developed anthrax as a result of dealing with the carcasses.

The double dipping of sheep seems to have reduced the trouble from sheep-scab, but Scottish sheep still seem largely responsible for outbreaks of the disease in England. As was only to be expected under war conditions and present regulations, parasitic mange in horses has shown a greater tendency to spread. Our experience has been that it has increased in all animals, including the cat, pig, goat, and dog. The scarcity of nutritious food is a factor in the matter.

"BLOW-HARD," OR METHYLATED SPIRIT.

IN reference to an ex-soldier charged in the Belfast custody court on Oct. 26th with being drunk from taking methylated spirit, the resident magistrate, Mr. Garrett Nagle, said that 9 out of 10 cases of drunkenness brought before him were against people who had taken methylated spirit in the form called, "blow-hard." He said it was an extraordinary circumstance that while methylated spirit was so difficult to purchase for domestic purposes men seemed to get drunk on it without any difficulty. The usual way the methylated spirit is taken is to mix a wineglassful with a pint of porter, and this mixture is really the "blow-hard," and is a cheap intoxicant.

The Laboratory of the Royal College of Physicians, Edinburgh, is preparing the mixed vaccine of *B. influenzæ*, *pneumococcus* and streptococcus recommended by the War Office conference. The supply can be obtained through Messrs. Duncan, Flockhart, and Co., 104, Holyrood-road, Edinburgh.

AT a recent meeting of the governors of the Royal Devon and Exeter Hospital, Exeter, Sir E. Chaning Wills, the President, stated that there were 100 patients waiting admission. He added that as an enlargement of the hospital was necessary, if the Government would release materials and sanction the scheme, Lady Wills and himself would give a substantial sum towards the appeal for financial support which the committee would make.